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ABSTRACT

This manual provides information and materials for a professional development program aimed at assisting middle and high school faculties with decision making regarding curriculum integration. The program is an outgrowth of a 2-year research and development project on interdisciplinary teamed instruction conducted in four rural secondary schools in Virginia. Curriculum integration is a holistic approach to learning that stresses connections and relationships rather than delineations across academic disciplines and between academic and vocational programs. Section I presents a rationale for curriculum integration and a continuum of models ranging from discipline-based to fully integrated. The goal is for staff to find answers to three important questions: What is curriculum integration? Why do we need to integrate? How do we integrate? Section II discusses four conditions in the school environment that are conducive to curriculum integration: collaborative school culture, compatible core beliefs, support for change, and facilitating structures. The goal is for staff to determine their readiness for change and to make an informed decision about integrating the curriculum. Section III provides first steps in curriculum integration, such as selecting team members, choosing team structures, and designing appropriate schedules. An accompanying facilitator's guide includes objectives to guide planning of group meetings and processes; an overview of suggested activities, including recommended time structures and agendas for meetings; a complete description of each suggested activity to facilitate group consideration of curriculum integration, including general tips to the facilitator; handouts for participants; and overhead transparencies. (LP)

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DISSOLVING THE BOUNDARIES

Planning for Curriculum Integration in Middle and Secondary Schools

Rebecca Crawford Burns

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Planning for Curriculum Integration in Middle and Secondary Schools

Rebecca Crawford Burns

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Dedication

For Catherine Farry, who nurtured my understanding and appreciation of language,

and

for my husband, Tom, "the wind beneath my wings."

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I am grateful to the field-test school facilitators and participants and the critical readers, all of whom provided valuable comments on the draft manuscript. Also, I consider myself fortunate to have worked with the teachers and administrators in the four original Interdisciplinary Teamed Instruction project schools. They provided insight on the concepts and processes of integration, and their work is highlighted in this book.

Rebecca Crawford Burns

Foreword

Today we are being catapulted into a world of fundamental change by increasingly sophisticated technological advances. Little will ever be the same again. Most professions are undergoing fundamental changes in definition. To be effective in changing times, education must also change. The knowledge explosion alone tells us how important it is to revisit the question of what is worth knowing. New understandings of how people learn challenge the traditional notions of teaching and learning. Across North America, educators are seeking new answers to the basic questions that underlie education. Time and time again, the search leads to an integrated approach to curriculum as a way of educating students to live productively in the 21st century.

However, fundamental change is never easy. I have worked with many different teams developing and implementing integrated curriculum at all levels ranging from elementary to college. Again and again, I am struck by how this process is essentially about thinking in new ways about both what's worth knowing and the underlying principles of teaching and learning. Some educators have already made shifts in beliefs and the path ahead is clearer; for others this is new territory to explore both in practice and through discussion.

Perhaps the most important ingredient for successful curriculum integration is the time to dialogue together. Without time for such dialogue, a dissenting voice can sabotage the project. Through discussion, we can begin to clarify our own beliefs. Often deeply held beliefs are implicit and we rarely articulate them; however, they drive our practice. Exploring these with others is invaluable and paves the way to working collaboratively. As well, educators need time to discuss and understand current models of integration and to explore how they can be applied in practice. In this way we can create real meaning for something that may have only been understood at an abstract level before.

Dissolving the Boundaries is an important book, for it offers teachers a process through which to examine both personal belief systems and a range of possible models for integration. Thus it facilitates building a faculty's readiness and commitment for curriculum integration before they start on the journey. It is stacked with real-life examples of how other schools have used integration successfully and offers useful change management strategies. Perhaps the greatest strength of this book is that it is unique as a school–based professional development tool promoting faculty readiness. Without faculty readiness, any efforts at curriculum integration seem doomed for resistance and even failure. This book begins where we must all begin—with ourselves.

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Preface

Dissolving the Boundaries: Planning for Curriculum Integration in Middle and Secondary Schools is an outgrowth of a two-year research and development project on interdisciplinary teamed instruction (ITI) conducted by the author in four Virginia secondary schools. I would like to thank the teachers and administrators in the ITI project for their efforts. Their wisdom has enriched this book.

Among the lessons learned during the ITI project is that faculty and administrator commitment and support are essential to successful ITI implementation. Whether curriculum integration is initiated by an entire school faculty or by a pioneer group of teachers, **all** will be affected by the organizational and structural changes that accompany it. Before initiating ITI, faculties must understand the content and processes of curriculum integration and determine their readiness to begin dissolving the artificial boundaries that separate disciplines of knowledge.

Dissolving the Boundaries is a unique professional development tool that can assist middle and high school faculties with decisionmaking regarding curriculum integration. It also may be helpful to school improvement councils, district committees, teacher education classes, or other groups that wish to learn more about curriculum integration. This book may be used effectively in a group setting. A *Facilitator's Guide* is available. It contains a timeline for using the materials, step-by-step directions for an administrator or other group facilitator, interactive group activities, transparency masters, and participant handouts.

Understanding Curriculum Integration, Section I, presents a rationale for curriculum integration and a continuum of models. As faculties explore the integration process, they find answers to three important questions: (1) What is curriculum integration? (2) Why do we need to integrate? (3) How do we integrate?

Assessing Your Readiness for Curriculum Integration, Section II, discusses four conditions in the school environment that are conducive to curriculum integration: (1) collaborative school culture, (2) compatible core beliefs, (3) supports for change, and (4) facilitating structures. As educators read about each condition, they compare it with the status quo in their school. After assessing the status quo of teaching and learning in their school and determining their readiness for change, teachers and principals are ready to make an informed decision about integrating the curriculum.

Preparing Teams for Curriculum Integration, Section III, is for those who are ready to begin the journey toward curriculum integration. It provides first steps, such as selecting team members, choosing team structures, and designing appropriate schedules. After completing Section III, teams of teachers and administrators have a "game plan" for initiating curriculum integration in their school or district.

Although *Dissolving the Boundaries* is addressed primarily to teachers and principals, curriculum restructuring should be the concern of all members of the school community. Central office staff, parents, community members, and students should be informed about what works in teaching and learning and be involved in curriculum implementation decisions. Because their commitment and support will be essential for successful curriculum integration, representatives from these groups should be included in the study of *Dissolving the Boundaries*.

I hope that teachers, principals, and others will find this publication useful as a professional development tool and that it will stimulate reflection and conversation about connecting knowledge and promoting learning.

Rebecca Crawford Burns

Section I

Understanding Curriculum Integration

What Is Integrated Curriculum?

Why Do We Need to Integrate?

How Do We Integrate the Curriculum?

Conclusion

Section I: Understanding Curriculum Integration

What Is Integrated Curriculum?

Historical Perspective

Efforts to integrate the curriculum have a long history. Some studies have traced the origins of curriculum integration in the United States to the 1800s (Vars, 1991). Other studies trace its roots to the progressive education movement of the 1920s that advocated integration through themes to increase content relevance for students (Beane, 1991; Vars, 1991). During the 1960s, there was a shift to discipline-oriented curriculum based on Jerome Bruner's theory that the disciplines provided the structure for storing and retrieving knowledge. However, in the 1980s and 1990s, research on how people learn indicates that the brain searches for patterns and interconnections to construct meaning (Caine & Caine, 1991). So, if humans learn through connection making, it makes sense to teach through connections, not fragmentations, of knowledge.

It makes sense to teach through connections, not fragmentations, of knowledge.

Definition

Integrated curriculum is a holistic approach to learning that stresses connections and relationships rather than delineations within and across the academic disciplines and between academic and vocational programs. It is a tool for building bridges instead of boundaries between specific bodies of knowledge. Contrary to traditional discipline-based curriculum that focuses on content objectives, integrated curriculum is concept driven and focuses on performance expectations that describe the generic knowledge, skills, and habits of mind that students are expected to attain. At the heart of an integrated curriculum are students' needs and interests.

At the heart of an integrated curriculum are students' needs and interests.

Integrated curriculum may be organized around themes/topics, essential questions, metacognitive skills, or real-life issues. Section I presents a curriculum continuum that ranges from discipline-based to fully integrated. Regardless of its structural model, integrated curriculum should include appropriate disciplinary knowledge, address the needs of learners, and reflect the real world.

Why Do We Need to Integrate?

The master argument for curricular integration is simply that life is not divided into subjects. This argument may be grounded in either personal or social reality. That is, academic departments fit neither the way individuals build their personal knowledge structures nor the way social problems arise to which knowledge may be applied.... Language educators now believe it's better to integrate listening, speaking, reading, and writing; science educators, biology, physics, chemistry, and earth sciences; arts educators, drama, music, dance, and art; math educators, arithmetic, algebra, geometry, and calculus. Perhaps it's time to intermix these major subjects themselves.

James Moffett (1992)

Theoretical Base

The interest in and need for curriculum reform have been central to the school restructuring movement. The knowledge explosion in each of the academic disciplines, fragmentation of the school day, new evidence about brain function that indicates the brain makes meaning by searching for patterns and interconnections, and growing numbers of disengaged learners who perceive little relevance in school life have intensified the need for curriculum integration at all educational levels (Jacobs, 1989). Although curriculum integration is not a panacea for all the problems in schools, it can heighten the relevancy of learning experiences by reinforcing concepts, skills, and attitudes across disciplines and by connecting students' school work to experiential applications.

Curriculum integration has positive effects on learning and teaching.

Dissolving the artificial boundaries that exist between traditional academic disciplines and between academic and vocational areas may indeed be a necessary first step toward increasing student learning. When educators shift the focus of instruction from a prescriptive, discipline-based orientation to a more relevant focus on "real-life" issues, problems, and skills, students are more motivated to learn and they become more active participants in their own learning. When teachers integrate their curricula, they reduce knowledge fragmentation and avoid duplication of both skills and content. This enhances connection making and in-depth understanding, and promotes mastery of the fundamental knowledge and skills, particularly higher-order thinking skills, that prepare students for life in the 21st century (Drake, 1993).

Theory into Practice

Although most of the literature related to curriculum integration is theoretical, secondary teachers who have implemented interdisciplinary teamed instruction cite positive effects on student achievement, motivation, interest, and participation. A member of the eleventh grade humanities Interdisciplinary Learning Team (ILT) at one high school cited several advantages of the ILT approach over traditional ways of teaching: (1) students see cooperation modeled by their teachers; (2) students have the benefit of consistent standards and expectations; (3) students and teachers learn respect for similarities and differences among disciplines; (4) students see the connectedness of skills and concepts across disciplines; (5) students have greater potential for bonding with teachers and peers; and (6) students have the flexibility of completing assignments beyond the confines of a single class period.

> *A lone teacher can impart phonics, fractions, the pluperfect tense, or the periodic table, but only through teachers' collective efforts will schools produce educated graduates who can read and compute; apply scientific principles; comprehend the lessons of history; value others' cultures and speak their languages; and conduct themselves responsibly as citizens. Such accomplishments are the product of a corporate venture.*
>
> Susan Moore Johnson (1990)

In focus group interviews conducted with teams of teachers and administrators from four Virginia secondary schools who had used interdisciplinary teamed instruction for one year, teachers reported positive effects on their students. Among the benefits to students cited by these teachers were (1) greater enthusiasm for learning, (2) increased participation in and completion of learning activities and assignments, (3) better grasp of concepts and skills, (4) making connections across disciplines, (5) fewer discipline problems, and (6) improved attendance.

Teachers, too, benefit from an interdisciplinary team approach to instruction. Teachers gain a sense of belonging and support when they work with a group of peers on a daily basis. Additionally, teachers contribute their expertise to a team effort and are not overwhelmed by the need to be an expert in all areas of the curriculum or a mentor/advisor to all students. Teachers who have designed integrated curriculum and worked on an interdisciplinary team also report personal feelings of increased efficacy, empowerment, and enthusiasm for teaching; learning from their colleagues; increased creativity; and professional renewal.

In summary, many instructional teams that have designed and implemented integrated curriculum report positive outcomes for themselves and their students. It seems that theory is supported by practice.

How Do We Integrate the Curriculum?

Thus far, we have provided a definition and rationale for curriculum integration. At this point, the reader may say: "Okay. I know what it is, and I think there's a need for it. But, how do we do it?" Following are explanations of three integrated curriculum systems and a description of five developmental stages of cross-curriculum integration.

Hierarchy of Curriculum Systems

The whole is greater than the sum of its parts.

Integration occurs within and across disciplines. First, content within each academic discipline has depth and breadth; therefore, integration occurs as different subjects are explored ***within*** a discipline. For example, to replace the layer-cake approach to secondary science instruction, the Scope, Sequence, and Coordination initiative of the National Science Teachers Association promotes teaching a "slice" of each science—biology, chemistry, physics, and earth science—every year in a well-coordinated way for all students. Other national groups representing the core subjects—mathematics, social studies, and the language arts—have recommended integration within their disciplines. Integration or coordination within a particular discipline, teaching fewer topics to allow greater depth (less is more), is a first step toward exploring connections with other disciplines.

Second, skills, concepts, themes, and topics are integrated *across* disciplines as students link ideas from one subject to ideas in another subject. For example, in 1989, another national science group, the American Association for the Advancement of Science, launched Project 2061, a multiphase reform effort to integrate science, mathematics, and technology. The fundamental premise of Project 2061 is that schools need to focus on essential topics or themes (e.g., Systems, Patterns of Change, Constancy, etc.) that help students understand the connections that exist within the sciences, between the sciences and the real world, and between the sciences and other disciplines of study.

A third model of linking the disciplines involves the integration of academic and vocational programs. Job skills for the 21st-century worker are complex. Therefore, educators need to strengthen the academic components of vocational courses. In fact, the Perkins Act, the federal law on vocational education, requires the integration of academic content—particularly math, science, and communication skills—into vocational programs. However, many experts believe it is unrealistic to expect vocational programs to make the change alone. Instead, they advocate for stronger connections between academic and vocational courses.

The following section describes a continuum of curriculum integration designs. Its purposes are (1) to clarify the stages of curriculum integration, and (2) to assist teachers with the implementation process. Beginning with the first stage, which represents the first step beyond the traditional fragmented curriculum found in most middle and high schools, the continuum describes a developmental process through which teachers can reach full curriculum integration. Also, the continuum gives teachers a framework for determining where they are in terms of integration (or where they would like to begin the process), the implications for students and teachers at that particular point, and the implications for themselves and their students in moving up or down the scale. Ultimately, the continuum helps teachers assess their readiness to move ahead with curriculum integration and offers suggestions on how they might get there.

Evolution of Integration: A Continuum

Several writers (Brazee & Capuletti, 1994; Drake, 1993; Fogarty, 1991; Jacobs, 1989) have identified a curriculum continuum that ranges from discipline-based to fully integrated. Building on their work and my personal observations of teams of teachers who have designed and tested integrated frameworks, I have developed a continuum that illustrates the evolutionary stages between traditional and fully integrated curricula.

The stages of the continuum are both evolutionary and incremental, but school faculties or instructional teams do not necessarily move in a linear way through the stages, nor do they move evenly through all the variables (see Figure 1). Within a school faculty, individual teams may be at different stages on the continuum. For example, the entire faculty may participate in schoolwide multidisciplinary units, while some instructional teams are at the parallel stage, others are using an interdisciplinary approach, and some have integrated their curriculum. Furthermore, although more collaborative teaching and learning strategies are generally seen at more highly integrated stages, some teachers at the early stages of integration may employ these strategies with their students (see sample units in Appendix).

Within a school faculty, individual teams may be at different stages on the continuum.

Although other writers have limited their description to the curriculum itself, I have added to my continuum the variables of instruction, assessment, and classroom culture (see Figure 1). I have done so because I believe (1) curriculum, instruction, assessment are inextricably linked and interdependent; (2) what we teach, how we teach, and how we evaluate student learning affect the culture of the classroom; and (3) change in any one of these four areas precipitates change in all of the others.

VARIABLE/COMPONENTS	EVOLUTIONARY STAGES OF CURRICULUM INTEGRATION				
	Parallel Disciplines	**Multidisciplinary**	**Interdisciplinary**	**Integrated**	**Transdisciplinary**
I. Curriculum					
A. Focus	Content and procedures of separate disciplines		Generic and metacognitive concepts and skills	Real-life skills, issues, concerns, and questions	Students' social-personal concerns and questions
B. Decisionmaker (architect)	Individual teacher	Individual teacher	Teaching team	Teaching team with student input	Students with teacher input
C. Deviation from traditional curriculum	Resequenced content	Revised content to fit a theme	Blended content that emerges from disciplines	Discipline boundaries dissolved; essential-concept orientation	Subject-transcendent, student-identified topics
D. Degree of implementation	Sporadic-convenient	Periodic "add on"	Regularly planned instructional blocks	Full core curriculum (usually half day)	Total curriculum
II. Instruction					
A. Teacher role	Specialist	Specialist	Generalist	Generalist	Generalist
B. Teaching style	Director	Director	Facilitator-director	Facilitator	Mentor
C. Learning activities	Mimetic	Mimetic-constructivist	Constructivist-mimetic	Constructivist	Constructivist-experiential
D. Learning environment	School	School	School	School and community	Community and school
III. Assessment					
A. Purpose	Summative	Summative	Formative and summative	Formative and summative	Formative and summative
B. Methods	Standardized, product-oriented	Standardized plus alternatives	Performance-based; emphasis on process	Performance-based and portfolios	Portfolios and exhibitions of mastery
C. Evaluator	Teacher	Teacher	Teacher, peer, self	Peer, self, teacher	Self, peer, others, teacher
IV. Classroom Culture					
A. Climate	Competitive	Competitive-cooperative	Cooperative-collaborative	Collaborative	Collaborative
B. Student role	Passive	Passive-active	Active	Active	Active-reflective
C. Student-teacher relationship	Dependency	Dependency	Dependency/self-direction	Self-direction	Self-direction

Figure 1. Evolutionary Stages of Curriculum Integration

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The vertical axis of the continuum (Figure 1) represents four components or variables of curriculum integration: (1) curriculum, (2) instruction, (3) assessment, and (4) classroom culture. The horizontal axis represents the stages in the evolution from discipline-based to transdisciplinary curriculum. As the following paragraphs explain, when curriculum evolves from fragmented to integrated, changes occur in the other variables.

Stage 1: Parallel Disciplines. Teacher partners in related disciplines sequence content to coincide.

➧ Key word: **Sequencing**

Parallel disciplines. The first stage on the continuum, parallel disciplines, represents a first step away from the traditional approach and often leads to higher stages of integration. Observing teams of secondary teachers, I have found that many of them begin at this stage because it is relatively painless to do. There is actually no change in what is taught; there is merely a change in ***when*** some things are taught. The content and procedures of each of the separate disciplines are clearly evident and are usually studied in isolation. Jacobs (1989) describes this process:

> Teachers working in a parallel fashion are not deliberately connecting curriculum across fields of knowledge; they are simply resequencing their existing curriculum in the hope that students will find the implicit linkages. (p. 15)

Fogarty (1991) uses the word *sequenced* to describe this stage of integration.

> The sequenced model is useful in the beginning stages of the integration process, using two [or sometimes three] discipline areas that are easily tied to each other. The teacher, working with a partner[s], starts by listing curricular content separately. Then, the team... tries to 'match up' or sequence some things to coincide. (p. 36)

One example of parallel disciplines is the familiar American literature/American history alignment in high schools. Teachers in both courses sequence their curriculum, generally in a chronological approach, to coordinate the study of a particular historical period with the literature of that period (e.g., students read *The Red Badge of Courage* in English class while studying the Civil War in history class).

Additional examples of parallel disciplines can be seen in the design of shorter units. For example, a ninth-grade team composed of English, geography, and earth science teachers designed a one-week

Observing teams of secondary teachers, I have found that many of them begin at this stage because it is relatively painless to do.

unit on hurricanes. The earth science teacher taught hurricane development and tracking, while the geography teacher taught latitude and longitude. During the same week, the English teacher introduced haiku poetry by having students write haikus about hurricanes. At another school, the eighth-grade English and social studies teachers coordinated study of the Revolutionary War with reading the novel, *Johnny Tremain*.

Generally, at the parallel disciplines stage there are few changes in instructional or assessment techniques and, consequently, little change in classroom culture. However, there is at least one advantage at this stage: when students see two or three teachers in different classrooms at different times of day make the same point, their learning is reinforced.

Stage 2: Multidisciplinary. Teachers weave a theme or topic through several content areas.

↔ Key Word: **Coordinating**

Once two or three teachers have experienced success with sequencing their curriculum, they may be more likely to take the next step toward integration.

Multidisciplinary. The second stage on the continuum, multidisciplinary, may easily evolve from the parallel disciplines approach. Once two or three teachers have experienced success with sequencing their curriculum, they may be more likely to take the next step toward integration. Some teams initiate curriculum integration with a multidisciplinary framework that asks: *What is important to learn within different disciplines?* (Drake, 1993, pp. 35-36). At this stage, a theme is used as a unit overlay for developing concepts and activities in several disciplines. Although each individual discipline is easily identifiable by teaching strategies and materials, this approach facilitates team planning as teachers work to weave a theme or topic through several content areas.

At the multidisciplinary stage, the focus remains on discipline content, but content is revised and adapted for a unit that may last from one to six weeks as teachers coordinate instruction around a theme or topic. Because the themes or topics selected are generally quite broad (e.g., the Renaissance, environmental stewardship, change), they provide possibilities for the diversities of many disciplines. For this reason, the multidisciplinary approach has often been used as a framework for schoolwide units. One faculty in a school housing Grades 6-12 designed a multidisciplinary unit on the 1992 presidential election. Led by an interdisciplinary team that had been trained in the curriculum integration process, teachers in each department and grade level met to brainstorm and select activities for the six-week unit. Although the duration and depth of the individual teacher's participa-

tion varied, every teacher in the building participated in some way in this unit. The faculty's response to the unit was typical of the way teachers frequently tend to view the multidisciplinary approach. Although they indicated that students were highly motivated by the activities, and that overall "it was a good experience," most of them viewed the unit as an add-on to their curriculum, and some failed to see the relevance of the unit activities to their discipline.

Although the election topic was relevant to the real world, that is not always the case with themes chosen for multidisciplinary units. There is often a tendency to select artificial or narrow themes that do not easily relate to some curricular areas, and that may lead to a contrived curriculum. When planning multidisciplinary units, teachers must be sure to keep the content relevant and vigorous.

When planning multidisciplinary units, teachers must be sure to keep the content relevant and vigorous.

When teachers reach the multidisciplinary stage, changes begin to appear in their instructional and assessment strategies. Although the classes remain separate, teachers do need to plan together. Also, these units usually include different instructional activities such as student projects, group activities, guest speakers, and field trips. Because instruction changes, methods of assessment frequently change, with teachers adding alternatives to standardized assessments that are commonly used in traditional classrooms. Also, because students are generally highly motivated by the activities used in this approach, classroom culture becomes less competitive, passive, and teacher-dominated. Instead, classroom culture is enhanced as students participate in more active and collaborative learning experiences.

The multidisciplinary stage of integration has several advantages: (1) it is a familiar, straightforward model that allows individual disciplines to maintain their identity; (2) it facilitates teacher teaming; (3) it motivates students; and (4) it helps students make connections among the disciplines. However, it has problems as well. Theme selection may be difficult, and incorporation into some disciplines may be forced. There is also a tendency to focus on activities rather than concepts. And, finding time for planning may be difficult if common planning time is not built into the school schedule. Nevertheless, the multidisciplinary approach may serve as a catalyst to move the curriculum toward full integration.

Stage 3: Interdisciplinary. Instructional teams create curriculum around overlapping skills, concepts, and attitudes.

➧ Key Word: **Focusing**

Teachers begin to use this model by setting curricular priorities in each discipline and finding the overlapping skills, concepts, and attitudes across disciplines.

Interdisciplinary. At the interdisciplinary stage, emphasis shifts from applying themes to subject areas to focusing on the commonalities that emerge across disciplines. Also, at the interdisciplinary stage, curricular decisions begin to focus on the learner rather than on subject content, and emphasis is on metacognition and learning how to learn. The guiding question becomes: *How can we teach a student higher order competencies?* (Drake, 1993, p. 38). Teachers begin to use this model by setting curricular priorities in each discipline and finding the overlapping skills, concepts, and attitudes across disciplines. At this stage, major content revision occurs, discipline boundaries blur as curriculum is blended, traditional departmental structures are generally replaced with interdisciplinary teams, and team teaching begins. Teachers assume greater control over and responsibility for their curriculum. Instead of adhering to curriculum guides and textbooks, interdisciplinary teams create their own curriculum.

At the middle and high school levels, partner planning and teaching are often used at this stage of the continuum.

At the middle and high school levels, partner planning and teaching are often used at this stage of the continuum. For example, science and math teachers use data collecting, charting, and graphing as shared concepts that can be team taught, or a faculty or interdisciplinary team chooses to focus instruction on problem solving, decisionmaking, and communicating.

At a middle school, the entire faculty participated in a six-week interdisciplinary unit called "Surviving in a Changing World." A leadership team composed of representatives from each of the school's five instructional teams developed a unit focus statement, goals for students, and criteria for lesson plans to be developed by each instructional team. Their focus statement provides a good example of how an interdisciplinary unit might look:

> A unit that will develop the skills of decisionmaking, problem solving, and communicating necessary for survival in an ever-changing world through focused study of the environment, technology, multiculturalism, social/economic issues, and job skills.

Although this focus may be a bit broad for a six-week unit, it nevertheless illustrates faculty understanding and implementation of interdisiciplinary curriculum.

In another case, a senior high school team composed of two English teachers, two social studies teachers, and one chemistry-biology teacher who shared a common group of students developed a series of interdisciplinary units for the school year. These units focused on the generic and metacognitive skills that the team members felt were most needed by their particular students. For instance, problem solving, communicating, and decisionmaking were included. In addition, these teachers felt that the students in this rural school needed to develop greater understanding of other cultures and reduce prejudice, so they included a major focus on critical-thinking skills in a unit on global awareness and interdependence. The teachers developed an attitude survey to determine pre- and post-unit awareness of and attitudes toward various cultures and ethnic groups. At the end of the six-week unit, students' awareness of other cultures had increased, and their attitudes of tolerance and understanding of others' beliefs had improved. Interestingly, other faculty members learned of the team's plans and expressed their interest in participating in the unit, and a number of classes across grade levels participated in the culminating activity, a "cultural exhibition."

The interdisciplinary model facilitates integrated learning and an integrated core curriculum.

The interdisciplinary model facilitates integrated learning and an integrated core curriculum. It also motivates and enables student learning. For teachers, the interdisciplinary model builds interdepartmental understanding and fosters appreciation of staff knowledge and expertise.

Successful use of the interdisciplinary approach requires a knowledgeable, confident staff.

Successful use of the interdisciplinary approach requires a knowledgeable, confident staff. At this stage of integration, a number of changes in instruction and assessment occur. Teachers cannot rely on traditional resources such as textbooks when using this approach; they must be confident in using multiple learning resources within and, perhaps, beyond school walls. They begin to develop problem-based, student-centered instructional activities that enable students to become more collaborative, self-directed learners. Teachers at this stage also adopt new methods for student assessment that are standards-based rather than standardized and emphasize process as well as product. Assessment is formative as well as summative and becomes an ongoing part of the instructional process that is done *with*, not *to*, students. Consequently, these changes require less teacher direction and more facilitation. As one teacher put it: "I've become a guide on the side instead of a sage on the stage." Finally, teachers at this stage work collaboratively because this approach requires teams with blocks of planning and teaching time.

Stage 4: Integrated. With student input, instructional teams design curriculum around real-life issues, questions, and concerns.

●➧ Key Word: **Blending**

Integrated. The next stage on the continuum builds on successful interdisciplinary work. "Moving from interdisciplinary to integrated curriculum requires teachers to make a fundamental shift in their thinking about how and what students should learn" (Brazee & Capelutti, 1994, p. 4). Because of this challenge, some teachers never move into this stage. However, integrated curriculum exists in schools where teachers have been successful with interdisciplinary work and wish to build on student interest and motivation.

Integrated curriculum is built on subject-transcendant themes that are related to real-life issues, questions, and concerns.

Integrated curriculum is built on subject-transcendant themes that are related to real-life issues, questions, and concerns. Themes are generally named by teachers. However, an important change in the way curriculum decisions are made occurs at this stage: students also become curriculum writers. After themes are selected, students are asked to raise questions about the themes and identify related issues that are important to them. In other cases, students identify the themes and teachers clarify them. Teachers then select activities for addressing the questions and issues that relate to the theme and also determine methods of assessment. Of course, teachers must decide what students should learn before this process begins in order to assure that essential concepts and skills are included.

Teams that have reached the integrated stage devote a block of time to studying a problem or issue such as "How will the environment survive in the 21st century?" Six or seven units compose the full-year curriculum, and generally at least half of the school day is spent in integrated instructional blocks. During these large blocks, students pursue topics, develop skills, and work in various groups on activities that involve serious, in-depth consideration.

Curriculum at this stage becomes holistic.

Curriculum at this stage becomes holistic. Subject boundaries are dissolved, although the essential knowledge and skills of the various disciplines are "repositioned in the context of significant personal-social issues" (Beane, 1993, p. 19). Learning is concept-oriented rather than subject-oriented. Student assessment is almost entirely performance-based, and students participate in peer and self-assessment. As a result, classroom culture is active, collaborative, student-centered, and self-directed.

The process one high school used illustrates the development of integrated curriculum. Prior to engaging students in selecting themes, the faculty identified and defined eight concepts they felt were essential for all students to understand: systems, diversity, structure/function, change, balance, sustainability, interdependence, and valuing. Next, they determined seven skills for which students would need to demonstrate mastery: effective communication, critical thinking, creativity, interpersonal skills and ethical conduct, global responsibility and cross-cultural awareness, wellness, and information processing. Each integrated unit addressed several of the seven essential concepts and provided opportunities for students to acquire and practice all seven essential skills. For instance, "Living in the Future," a theme selected by students, focused on the concepts of survival, change, interdependence, and valuing. Several skill-development activities were then generated for each concept. For example, to gain understanding of the survival concept, students were asked to (1) research family histories; (2) research options to prevent or delay dying; and (3) gather and analyze data on gangs, violence, accidents, and disease. Each of the activities in the unit provided opportunities for students to demonstrate mastery of several of the essential skills.

Teachers who have integrated the curriculum have, no doubt, participated in serious conversations with their colleagues about what is really important for students to know, be able to do, and be like as a result of their schooling. They have focused curriculum, instruction, and assessment on those essentials, and they have discarded from the curriculum what was not essential.

Teachers who have integrated the curriculum have, no doubt, participated in serious conversations with their colleagues about what is really important for students to know, be able to do, and be like as a result of their schooling.

Beane (1993) describes some of the characteristics and conditions of an integrated curriculum. Realizing the extremity of the change required to reach this stage of integration, he says we have to believe that the stories of teachers who try this approach will encourage others to do so.

> Since knowledge and skill are not identified along subject lines, teachers who have seen themselves as specialists are asked literally to leave their teaching certificates at the classroom doors and enter instead as "teachers" in a generic sense, whose work is to help young people "search for self and social meaning." This implies that the knowledge and skills they will be involved with will be both broad and general, and without defined scope and sequence or even specified subject slots in the daily schedule. (p. 21)

Stage 5: Transdisciplinary. Students and teachers jointly develop curriculum that prepares students for the unknowns of the future.

Key Word: **Transcending**

Transdisciplinary. The transdisciplinary approach represents the highest level of curriculum integration. It differs from the integrated approach in three ways: (1) who makes primary curriculum decisions, (2) how curriculum decisions are made, and (3) where learning takes place.

Drake (1993) describes the highest stage of curriculum integration:

> The transdisciplinary curriculum is based on the question: *How can we teach students to be productive citizens in the future?* Learning takes place in a real-life or cultural context, and life skills, such as change management, perseverance, and confidence are paramount. Content is determined by student interests, and the instructional theme (e.g., law, environment, social issues) is usually selected jointly by students and teachers, rather than by predetermined curriculum guidelines. (p. 41)

In the transdisciplinary approach, the curriculum is organized into broad themes that students identify using a structured process.

The process for designing the transdisciplinary curriculum is similar to that used in developing the integrated curriculum. However, the roles of teacher and student are different. In the transdisciplinary approach, the curriculum is organized into broad themes that students identify using a structured process. These themes then become the focus for all learning. While students continue to work with teachers and peers in ways similar to those described in the integrated approach, they also learn to work in small groups and alone on a variety of learning activities (Brazee & Capelluti, 1994). Teachers must first determine their own expectations for the curriculum based on skills, content, and attitudes that have been identified at the local school by students, parents, administrators, teachers, and others.

There are, of course, other foci for a transdisciplinary curriculum. Brady (as cited in Drake, 1993) recommends that educators transcend themes to a broader curriculum that offers a systematic model of reality that reflects the real world. He suggests there are five major aspects of reality: environment, humans, ways of acting, ways of thinking, and how these aspects interconnect. Rather than teach chemistry or history, teachers help students make sense of human experience.

In the transdisciplinary curriculum, learning often takes place beyond the school walls as students are engaged in apprenticeships, mentorships, career shadowing, service learning, and other community-based activities. Assessment is ongoing, based on authentic performances, and often requires self-evaluation as well as instructor and/or mentor evaluation. Students are expected to apply broad, essential learnings in a practical setting and to reflect on the quality of their efforts. Teachers "teach" as facilitators or mentors who (1) assist students in reflecting on their learning experiences and in gaining understanding, (2) tutor, and (3) monitor student progress.

In the transdisciplinary curriculum, learning often takes place beyond the school walls as students are engaged in apprenticeships, mentorships, career shadowing, service learning, and other community-based activities.

At an alternative high school in Michigan, a transdisciplinary curriculum focuses on student-generated research and learning plans. Students select three subject areas that interest them (e.g., math, science, electronics), then look for ways to interrelate their chosen subjects with the school theme. Students set their own goals and design a plan for how they will accomplish them, and faculty consult and advise during all stages of the process. Students engage in as many realistic learning activities as possible, using the community as a resource and applying what they learn in the classroom to real-world problems. Although students create their own goals and determine activities and timelines for reaching them, these goals must meet three requirements: (1) goals are reasonable for everyone involved, (2) they fulfill criteria for demonstrating mastery of the school's six core competencies, and (3) they are approved by a teacher.

The advantages of the transdisciplinary approach are obvious: (1) students engage in meaningful exploration of real-life issues; (2) students develop a whole range of generic cognitive processes that can be used outside the classroom; and (3) through these processes, students learn to construct their own knowledge about the world in which they live.

The difficulties of employing a transdisciplinary approach are equally obvious: (1) educators need to be comfortable with an unstructured curriculum, (2) they need unstructured blocks of time and easy access to the community, (3) they need the cooperation and assistance of the community, and (4) they need to have moved beyond the confines of the disciplines in their view of teaching and learning.

Although a transdisciplinary curriculum may be most desirable to prepare students for the unknowns of the future, teachers must arrive at this stage incrementally. The transdisciplinary curriculum generally evolves only after teams of teachers have worked together on the design and implementation of integrated curriculum over a period of time.

While a number of researchers and educators, including myself, purport that higher levels of integration increase student motivation,

engagement in learning, performance, and preparation for the real world, they nonetheless recognize the obstacles to attaining full curriculum integration and to utilizing interdisciplinary teams. They also believe that a quality educational experience includes both discipline-field and integrated perspectives. What school faculties need to understand is that curriculum integration should not be an all or nothing proposition. Higher levels of integration generally evolve when teams experience success and comfort with the new ways of teaching that are inherent in these designs. Schools may concurrently employ a number of designs; they may also begin at any of the stages with the goal in mind of achieving comfort with one design before moving up the continuum. In any case, there are no recipes or easy answers. What educators must ***not*** do is try to jam the concept of an integrated curriculum into a subject-centered structure or begin the process of curriculum integration without the proper support structures in place. Faculties should engage in thoughtful conversations about curriculum and interdisciplinary teamed instruction before jumping to an implementation solution. The purpose of this book is to stimulate conversation about integrated curriculum and to assist with the implementation-decisionmaking process for interdisciplinary teamed instruction.

What school faculties need to understand is that curriculum integration should not be an all or nothing proposition.

Conclusion

Educators who embark on the journey toward curriculum integration must be prepared to let go of "sacred cows," to take risks, and to meet challenges. For many, the journey will be chaotic; for some it will be exhilarating; for others it will be impossible.

Fullan and Miles (1992) use the metaphor of journey to describe educational change, acknowledging that it is a process of moving largely through uncharted territory. Similarly, Drake (1993) compares the "Journey of the Hero" to five stages of developing integrated curriculum.

> The heroes as curriculum writers hear a *call to adventure* and enter the world of integrated curriculum. They leave behind traditional methods of curriculum development and experience ***endings*** accompanied by loss. This is followed by a ***struggle*** as they encounter anxiety, conflict, and the excitement of stepping into the unknown. Finally, they reach the ***reward*** and personal satisfaction of truly understanding how to integrate the curriculum. The last stage is *service* where the heroes, feeling fulfilled, share what they have learned with other interested educators. (pp. 6-7)

Section II of this book will help your faculty determine their readiness to begin the journey.

Section II

Assessing Your Readiness for Curriculum Integration

Condition One: Collaborative School Culture

Condition Two: Compatible Core Beliefs

Condition Three: Supports for Change

Condition Four: Facilitating Structures

Conclusion

Section II: Assessing Your Readiness for Curriculum Integration

Implementing interdisciplinary teamed instruction affects all of the key components of schooling: organization and management, curriculum, instruction, assessment, and school culture. To modify these "sacred cows," your staff may need to overcome barriers that are deeply rooted in their assumptions about learning and teaching.

This section of the book will help you answer some important questions:

- How committed and prepared are your staff to implement changes in curriculum, instruction, and assessment?
- What mental models and organizational structures must be present to support your change efforts?
- What conditions are conducive to implementing curriculum integration?
- What structures should be in place before you begin implementing interdisciplinary teamed instruction?

Failure to consider such questions could result in frustrated efforts that have little chance to succeed. If your staff are to develop new paradigms, it may be necessary to examine needs and attitudes, recognize potential problems, propose solutions, and identify supports before beginning the change process.

An integrated school looks and feels very different from a traditional one.

Before making the decision to begin curriculum integration, your faculty should take time to explore interdisciplinary teamed instruction and its implications for school change. Faculty members should assess their readiness and decide collectively whether to buy in to curriculum integration. Through this process, they commit to working together on implementation and to determining ways to promote understanding and acceptance of the inevitable changes that are part of the integration process.

Both Conley (1993) and Murphy (1991) identify the teaching-learning process as the core activity of education. Rather significant alterations in the structures of schools, or what Conley defines as supporting and enabling variables, are necessary to enhance reform of the teaching-learning process. Without a collaborative school culture, shared beliefs, supports for change, facilitating structures, and most

importantly, the desire to change the status quo of teaching and learning at your school, progress toward integration will be severely hampered.

The following pages present four conditions that are conducive to curriculum integration and teamed instruction. By examining the extent to which each of these conditions is present in your school, you will be able to identify areas in which your school is already well prepared for curriculum integration and teamed instruction, as well as any areas where change is needed.

Collaborative methods of working—sharing ideas, responsibilities, and decisions—result in balanced perspectives and better choices.

Condition One: Collaborative School Culture

The changes described under condition one "represent a fundamental reconceptualization of school climate—a shift from an emphasis on its physical factors and toward a focus on its human elements" (Murphy, 1991, p. 63). These changes enable implementation of curriculum integration.

Isolation or Collaboration?

The architectural features of secondary schools—individual buildings, cracker-box classrooms, and isolated portables—contribute to a culture of isolation and individualism. Isolation gives teachers a degree of protection to exercise professional judgment, but it cuts them off from ongoing feedback, praise, and new ideas from their peers. Without ongoing dialogue, teachers can learn little from their colleagues; therefore, they are not in a strong position to experiment and improve. Rosenholtz (1989) describes schools with cultures of isolation as ***stuck*** (learning impoverished). In these schools, students exhibit lower levels of achievement, teachers work alone, and change and improvement are not encouraged by administrators.

> *In a shared-influence setting, teachers have less individual autonomy because the pressure to do things differently comes from a source that they need to respond to—their peers. The loss of individual autonomy is offset, however, by the collective ability to do things on behalf of student learning that the teacher was not able to do in isolation.*
>
> Tom Donahoe (1993)

The organizational culture is different in an integrated school. In secondary schools, an interdisciplinary team approach is essential to planning, delivering, and evaluating integrated curriculum. This means that the culture or context of teaching becomes collaborative, rather than isolated. Collaborative methods of working with peers, supervisors, parents, and students—sharing ideas, responsibilities, and decisions—result in balanced perspectives and better choices. In an integrated school, individuals may

lose a certain amount of autonomy; on the other hand, they experience reduced feelings of isolation, and they gain emotional support and intellectual insight from their teammates and others. Rosenholtz describes schools with collaborative cultures as ***moving*** (learning enriched). In these effective schools, collaboration is linked with norms and opportunities for continuous improvement and career-long learning.

Interdisciplinary teamed instruction seeks to eliminate ***individualism*** (habitual patterns of working alone) but not ***individuality*** (voicing of disagreement, opportunity for solitude, and experiences of personal meaning), which can be a source of dynamic group learning (Fullan & Hargreaves, 1991). However, those who have developed collaborative school cultures attest to the challenges involved. Collaboration is not easy to achieve, because individualism and isolation are inherent in the culture of schools and in the traditional roles of teachers and principals. Many educators have never worked in a collaborative environment; some may resist the change from privatism to collegiality because they are moving into unknown waters. For most, the benefits of collaboration outweigh the barriers.

Collaboration among students and between students and teachers also is evident in an integrated school. Traditionally, classrooms have been competitive and individualized, with students working alone and competing against each other for grades. In an integrated school, cooperation is valued and student-to-student interaction is encouraged. Moreover, teachers become facilitators or coaches rather than classroom directors. In short, the focus of an integrated school is on learning, not on teaching.

ITI keeps me from feeling isolated in my classroom.

—Virginia teacher

One very important change is a new dialogue among teachers across curriculums.

—Virginia teacher

[With ITI] there is a continued discourse on the improvement of instruction: a movement away from isolationism to the benefits of globally agreed upon goals for student learning.

—Virginia principal

I really believe that we're too slow to bring certain understandings into all of our work, because we've got these disciplinary boundaries. We've got these professional boundaries that we never challenge and we never breach. They're just artifacts put there by tradition.

Sharon Robinson, Assistant Secretary,
U.S. Department of Education

Dissolving the Boundaries

Change in school organization may be necessary to achieve interdisciplinary collaboration. In a traditional school, the most common organizational structure is the subject department. Many secondary teachers identify themselves not just as teachers, but as teachers of particular subjects (e.g., an English teacher, a mathematics teacher, etc.). In the everyday life of traditional schools, subject identities may have larger meaning in terms of status differentiation: academic over vocational, or math and science as most rigorous. These identities and status systems may become tied to particular classrooms, scheduling priorities, grouping patterns, etc. (Beane, 1993). The result in some schools is a "***balkanized*** teacher culture—a culture made up of separate and sometimes competing groups, jockeying for position and supremacy like loosely connected, independent city-states" (Fullan & Hargreaves, 1991, p. 52).

Teachers in an integrated school no longer think of themselves as subject specialists, but as generalists who organize learning activities around essential questions, themes, or concepts.

In an integrated school, teachers dissolve department boundaries and work together in grade-level or multiage interdisciplinary teams generally composed of three, four, or more teachers. These teams share a common group of students, sometimes for longer than one year. Teachers in an integrated school no longer think of themselves as subject specialists, but as generalists who organize learning activities around essential questions, themes, or concepts. Their subject areas become sources of knowledge and skill that can be applied to larger purposes.

Principals of integrated schools facilitate team building and collaboration by providing block time for teamed instruction, common planning time for instructional teams, and instructional space that puts team members in close proximity and allows for flexibility in learning activities (e.g., large- and small-group space). Teams also receive training in team processes, feedback on their performance, and recognition for their accomplishments as they build interdependence, commitment to shared responsibility, and accountability as a unit.

Reflection

Everything and everybody is connected. Everything affects everything else. No matter how different, no matter how far away, we are all part of an interconnected whole...the fact is that no real division can be found between ourselves, other people, and the world around us—unless we create it in our minds. (Land & Jarman, as cited in Fullan, 1993, p. 98)

- How would you describe communication upwards, downwards, and horizontally in your school?
- What boundaries have been created between teachers in various disciplines in your school? Between teachers and administrators? Between teachers and students? Between staff and community?
- What are the benefits of dissolving these boundaries?

ITI has given me the chance to begin building a curriculum that is not limited by the artificial boundaries of subject areas and specific learning standards.

—Virginia teacher

Condition Two: Compatible Core Beliefs

Incompatible beliefs or philosophies have been cited by teacher teams, and by their administrators, as a major hindrance to implementing interdisciplinary teamed instruction.

To create a collaborative school culture, initiate changes in school organization, and adopt new views of curriculum, a school community must identify and share common beliefs about teaching and learning. These beliefs are sometimes referred to as core values. Once the school's core values have been identified—through a process that encourages input from the total school community (students, parents, staff)—the next step is to develop a clear vision of what the school is trying to become. From this shared vision, a mission and specific goals can evolve.

The importance of compatible core beliefs must remain paramount as faculties determine their readiness to initiate curriculum integration. Principals must also consider the compatibility of core beliefs when they assign teachers to instructional teams. Incompatible beliefs or philosophies have been cited by teacher teams, and by their administrators, as a major hindrance to implementing interdisciplinary teamed instruction. The following beliefs provide a framework that supports interdisciplinary teamed instruction.

Less is More

In the integrated curriculum, subject matter is not discarded; rather, it is honed, repositioned, and focused on essential content, skills, and attitudes that are identified at the local level by teachers, students, parents, and administrators.

A hallmark of curriculum integration is Sizer's (1984) concept of "less is more" (p. 89). While the traditional curriculum emphasizes breadth—coverage of a wide range of information, usually in a disconnected manner—Sizer believes that curricular decisions should be directed toward students' attempts to gain mastery of ***essential*** skills and concepts rather than by teachers' efforts to cover content. An integrated approach provides depth: it covers fewer topics in a more thorough and connected manner. It reflects the strengths of its teachers, the cultural and social makeup of its community, the rhythm of the school year or day, and what students find meaningful and interesting. In the integrated curriculum, subject matter is not discarded; rather, it is honed, repositioned, and focused on essential content, skills, and attitudes that are identified at the local level by teachers, students, parents, and administrators.

In an integrated school, "less is more" applies to the overall curricular offerings as well. Traditionally, educators have been more willing to add courses to cover a never-ending array of state and district requirements than they have been to limit or integrate them. This phenomenon, called course proliferation, was discussed by Powell, Farrar, & Cohen (1985) in *The Shopping Mall High School*. In an integrated school, teams of teachers plan ways to integrate new requirements into their program. For example, comprehensive health

education may be incorporated into integrated social studies and science courses; or fine arts requirements may be met through an interdisciplinary team approach to humanities instruction that integrates literature, writing, the arts, and history.

Today, many schools are making progress toward integration of academic and vocational courses. By so doing, they are not only streamlining their curricular offerings, but also are offering students increased opportunities to study topics of interest in depth and to apply knowledge gained in one class to work in another. Dempster (1993) summarizes this core concept of curriculum integration:

> ...truly effective learning requires frequent distributed practice, and this can only be achieved by reducing the size of the existing curriculum, which is dangerously overstuffed. (p. 437)

Related to the concept of less is more is the belief that the principal and teachers should perceive themselves first as generalists (teachers and scholars in general education) and next as specialists (experts in a particular discipline). This belief promotes a sense of commitment to the entire school and minimizes or eliminates individualism and balkanization (Fullan & Hargreaves, 1991).

I've thought more about what students need and not what I want to tell them. I've done more since I've been with the ITI program in soliciting what students want to learn.

—Virginia teacher

How We Teach Is As Important As What We Teach

As the continuum in Section I (p. 8) of this book indicates, when curriculum becomes more fully integrated, instruction generally becomes more constructivist. Students are involved not only in determining topics for study, but also in learning activities that enable them to construct a range of understanding performances around a topic (Perkins, 1991). An integrated curriculum emphasizes transfer of knowledge across disciplines and to the real world as it engages students and encourages connection making. Content knowledge and process skills (e.g., communicating, problem solving, decision-making) comprise equal shares of an integrated curriculum. Because students learn best by doing the real thing, project- or problem-based learning, which requires students to use higher-order thinking skills and to apply knowledge in real-life contexts, replaces textbooks and lectures as the primary teaching strategy. These core beliefs about how we teach influence (1) teaching style, (2) learning environment, (3) student assessment, and (4) classroom culture.

In an integrated school, teams of teachers plan ways to integrate new requirements into their program.

Teaching style. One of Ted Sizer's Nine Principles of Essential Schools states:

> The governing metaphor of the school should be student as worker, rather than the more familiar metaphor of teacher as

deliverer of instructional services. Accordingly, a prominent pedagogy will be coaching, to provoke students to learn how to learn and thus to teach themselves.

For many teachers, this core belief represents a radical and difficult change. Teachers, for the most part, are accustomed to directing their classrooms, which frequently translates into students reading, listening to teachers talk, and completing workbook pages. In an integrated school, the teacher's role becomes that of facilitator or mentor for student learning. This change evolves from the belief that students discover their own potential through work that provides autonomy and responsibility coupled with coaching, support, and the freedom to take risks and make mistakes. Coincidentally, principals must follow the same belief as they transfer curricular and instructional decision-making to interdisciplinary teams!

In an integrated school, the teacher's role becomes that of facilitator or mentor for student learning.

Learning environment. Because application of knowledge is an important element of instruction in an integrated curriculum, students are frequently engaged in activities that take place beyond the classroom walls. Service learning, apprenticeships, career shadowing, community-based study, and cultural experiences are but a few of the possibilities for learning in an alternative setting that an integrated curriculum may provide. Boundaries between school and community dissolve as more advanced levels of integration are attained. This belief has important implications for school-community relations; school-business partnerships; daily, weekly, and yearly schedules; course structure; student-teacher relationships; and other aspects of schooling.

Students showed significant improvement, greater interest in self-directed research and learning.

—Virginia administrator

Student assessment. When curriculum includes both content knowledge and process skills—and learning context and activities depart from the traditional classroom-based, teacher-centered approach—it seems natural to assume that the purpose and methods of assessment, as well as the evaluator of students' work, will change. In a traditional classroom, the purpose of student assessment is summative—to determine a grade; in an integrated classroom, student assessment becomes an ongoing component of instruction that guides the process of teaching and learning. The methods for assessment in the traditional classroom are generally standardized and product-oriented, but a core belief of integrated instruction is that student outcomes can be defined and measured in alternative ways. Assessment methods become increasingly performance-based in an integrated classroom. As students take more responsibility for their learning, and learning takes place in settings outside the classroom, the evaluation is not always done solely by the teacher. Frequently, a mentor or a panel of evaluators, including community representatives, may participate in evaluating student performances, exhibitions, or portfolios. Self- and peer assessment are used more extensively as well.

Classroom culture. Paralleling core beliefs about curriculum, instruction, and assessment are beliefs about classroom culture. Essentially, these beliefs are related to climate, student role, and student-teacher relationship. The traditional classroom culture is passive, dependent, and competitive: students are passive recipients of information, dependent on the teacher for knowledge and direct learning, and they compete with their peers for recognition and rewards—generally grades. As the curriculum becomes more fully integrated, classroom culture becomes more active, collaborative, and self-directed: students are actively engaged in self-directed learning, and they collaborate with peers and teachers to construct knowledge.

All Students Can Learn

Because it is considered politically correct, this belief often appears in school vision statements and other philosophical documents; however, it is not necessarily a true assumption of all educators and parents. Many have come to expect that some students will *not* be successful in school. They have reinforced that expectation by tracking these students into remedial or less-challenging classes, or by placing them in alternative schools. Although many schools are detracking and promoting inclusion and collaborative models that integrate special, remedial, and general education, many educators and parents are skeptical about the success of these models.

> *What's challenging to different students will be different, but the role of education is to challenge all students.*
>
> Sharon Robinson, Assistant Secretary,
> U.S. Department of Education

Thayer (1994) suggests that such expectations and skepticism may come from the belief that learning should occur at an established rate, generally by grade level or age (i.e., students learn to read in first grade; they study chemistry in high school). To the contrary, children learn developmentally, and some learn these things earlier or later than others. We also tend to think of certain classes (e.g., algebra, chemistry, and foreign language) as only for college-bound students, rather than as subjects that can be taught in ***different*** ways so that all students can learn and use their concepts. Fortunately, we now know that acceleration, attention to multiple ways of knowing, and teaching by connection making can replace remediation. And teachers who have worked on interdisciplinary teams report that curriculum integration improves student performance, particularly for lower achievers.

In an integrated school, student performance goals apply to all students, but the means to these goals vary as the students themselves vary. Achieving the goals requires high expectations from teachers, administrators, and parents as well as active involvement by the

With students involved, I think we are seeing more creativity and higher levels of thinking in the projects we are giving them.

—Virginia teacher

ITI isn't just for a set group of students. It's for all of them. They all get it.

—Virginia teacher

learners. Instructional practice is tailor-made to meet the needs of every group of students, and the various talents and expertise of team members are employed as means to help all students succeed. Parents, too, promote student success by supporting learning at school and at home.

Reflection

As you reflect on the core beliefs that support curriculum integration and teamed instruction, and compare them to the core beliefs that are predominant in your school, keep in mind that change takes time. Letting go of old beliefs and traditions is painful. Integrating the curriculum isn't "the way we've always done it." Changing educational belief systems requires time to examine our core values and to explore new paradigms. Endings must be recognized and respected.

- What attitudes, knowledge, and skills are graduates of your school expected to demonstrate?
- What percentage of your students achieve these goals?
- What core beliefs may need to change in order to promote success for all?
- Which of the core beliefs discussed above will find widest acceptance with your school community? Which will present the greatest challenge to consensus?

Condition Three: Supports for Change

When teachers in the Appalachia Educational Laboratory's (AEL) Interdisciplinary Teamed Instruction (ITI) project were asked to identify the necessary conditions for successful ITI implementation, they mentioned both supports for change and facilitating structures. Although these conditions are identified in other literature about change and seem to make intuitive sense, the experience of ITI practitioners is further reason for their inclusion. The following discussion centers on four essential supports for change: (1) readiness for change, (2) a nurturing work environment, (3) supportive leadership, and (4) ongoing professional development in ITI concepts and processes. Research suggests that these resources are critical to successful implementation of curriculum integration.

Readiness for Change

> *Whether the nation's classrooms will be restructured depends on whether educators will make the changes asked of them—a vast process of adaptation that must be accomplished teacher by teacher, school by school.*
>
> Robert Evans (1993)

Openness, flexibility, creativity, and vision are characteristics most often described by those who have taken the journey toward curriculum integration as necessary for completing it successfully. Given the same resources, training, and support, different teams of teachers do not always reach the same level of success in implementing ITI. Generally, a team's success depends largely on three factors: (1) dissatisfaction with the status quo of learning and teaching in their school, (2) willingness to consider new alternatives, and (3) openness to the opinions of their team members. Change seldom occurs when there is satisfaction with the status quo.

Change seldom occurs when there is satisfaction with the status quo.

In an article in the *Journal of the New England League of Middle Schools*, authors Brazee and Capelluti (1994, Spring) provide the insight of three outstanding principals engaged in curriculum integration. One of the questions asked of the principals was: *What are the ingredients/assets/beliefs that a teacher must possess to be successful with curriculum integration?* (p. 26)

Following are the three principals' perspectives.

(1) There must be a commitment, an excitement to change, to do things differently. There must be a belief that an integrated curriculum is a more effective way to develop learners and

thinkers. There must also be a willingness to spend extra time that is required to move to an integrated curriculum.

(2) Teachers must see that there are advantages to an integrated curriculum....Peers are the best at showing peers that it works. Teachers should also read about why it makes sense, how learning happens....Teachers should also be aware that there are roadblocks and should talk with teachers who have overcome these barriers. The support for this work comes from looking at different ways teachers work together.

(3) Teachers must be team players, willing to work collaboratively to reach consensus. They must be lifelong learners, willing to try new approaches. Teachers need to adjust to the facilitator role rather than a disseminator role. They must be flexible and willing to adapt to constantly changing schedules, and willing to share knowledge. They must like and believe in hands-on activities for and with students. And finally, they must support cooperative learning approaches.

Real change is always personal, organizational change always painstaking.

Robert Evans (1993)

Most importantly, the authors conclude, teachers must believe that integration is in the best interest of students and is the approach that best fits with what is known about good teaching and learning. (p. 28)

Teachers and principals in AEL's ITI project offered similar perspectives when asked to describe behaviors that seemed to facilitate implementation of ITI. Facilitating behaviors most often mentioned were flexibility, a willingness to try new things, risk taking, open-mindedness, teamwork, effective communication, and compromising.

When administrators in the project were asked about the most difficult components of ITI to implement, the most frequently mentioned was team building. For example, some reported that strong personalities of team members clashed, or philosophical differences about instructional delivery sometimes posed problems for the team. Lack of collegial skills and commitment from team members also were described as hindering ITI.

Approximately 10-20 percent of most school faculties are eager to initiate educational change.

Approximately 10-20 percent of most school faculties are eager to initiate educational change. These educators investigate new practices through reading professional journals, attending conferences, and talking with their colleagues. They are probably already aware of curriculum integration and teamed instruction and may even be experimenting with them. However, the remaining 80-90 percent of the faculty may be passive, some even reticent, in regard to educational change.

While many teachers embrace change, others do not. To build commitment to an innovation among those who must implement it requires a vital school culture that affirms its members. If the culture also supports risk taking, teachers are more willing to innovate (Evans, 1993).

Nurturing Work Environment

> *If we want to improve schools, we must risk doing things differently this September than we did last September. New ideas are a sign of life.*
>
> Roland Barth (1990)

Change efforts are most successful in a nurturing work environment that is open to improvement, encourages risk taking, and provides recognition and rewards. Teachers who integrate curriculum must be stretched and supported in their efforts by parents, administrators, and colleagues. They must be encouraged to take risks, protected by a safety net of shared responsibility, provided with feedback on their efforts, and recognized for their accomplishments.

> *Students won't learn and teachers won't collaborate if they don't feel respected. Change involves the heart as well as the head.*
>
> Tony Wagner (1993)

Mutual trust and respect between role groups also is necessary for any school improvement to occur. Teachers must feel that they are honored for their expertise within the school, as well as within the district, the parent community, and other significant groups. Respect and trust build the professional commitment and cooperation required for a collaborative school culture. Administrators can do much to promote collaboration and trust within the school community; however, teachers need to boost their own status by reaching out to gain support from colleagues, administrators, parents, and others, rather than always waiting for someone else to promote their efforts.

Because interdisciplinary education generally falls outside the norms of the culture of the school or school system, support from key individuals and groups will be necessary to launch and sustain the program (Jacobs, 1989).

A principal, curriculum director, superintendent, or school board member may be in a position to afford or withhold support for curriculum integration. Tradition-bound colleagues may try to discourage others through peer pressure. Some parents, too, can be inhospitable to change and exert their own kind of pressure. Finally, if the integrated program is elective, students may not sign up. All of these situations can be demoralizing and discouraging to interdisciplinary team members.

Political support—primarily from colleagues, parents, and supervisors—is necessary for successful implementation and maintenance of any innovation.

Like a gardener I plant seeds, and as a supporter I give information.

—Connecticut principal

The administrator removes barriers and supports teachers' work.

—Florida principal

Our administrators have not only encouraged us to implement ITI, they have provided an atmosphere where risk taking is not something to fear.

—Virginia teacher

Political support—primarily from colleagues, parents, and supervisors—is necessary for successful implementation and maintenance of any innovation. One of the best ways to launch a support-building effort is to include representatives from central office, parents, and students in faculty meetings and professional development sessions that focus on integration. Seek their ideas as well as their support!

Supportive Leadership

Teachers consistently identify administrative commitment and support as the most essential condition for successful ITI implementation. Although administrators are primarily responsible for providing the facilitating structures—such as adequate budget, time, and space—they must demonstrate their commitment to ITI in other ways as well. Administrators must see themselves as supporters, facilitators, barrier removers, and resource finders.

Teachers in the ITI project, for example, most often identified (1) participation in the team process, and (2) expressing support for ITI to others (e.g., students, parents, other faculty, central office) as facilitating administrator behaviors. When an administrator met with the ITI team on a regular basis (usually once a week), the team not only perceived greater commitment, but also made greater progress toward effective ITI implementation. When administrators communicated their support of ITI to others through assistance with schoolwide units, by providing time for discussion of ITI at faculty meetings and retreats, and by communicating with parents and central office staff about ITI goals and activities, team members reported the highest perceptions of administrator commitment (Burns, 1994).

Both teachers and administrators in the ITI project identified providing fiscal and material resources and time as important administrative behavior. Other facilitating behaviors included encouragement of risk taking, ability to focus the team's attention, and an understanding of change theory.

Other principals have identified their role in curriculum integration similarly as resource provider, visionary, coordinator, support system for teachers, and asker of "what if" questions to help teachers think through implications of their actions (Brazee & Capelluti, 1994).

When teachers see that their principal is truly committed to ITI, and also to them, they are far more likely to risk the change.

Ongoing Professional Development

Teachers need continued support in moving from where they are to where they want to be.

Sharon Robinson, Assistant Secretary,
U.S. Department of Education

Ongoing professional development, based on clear goals articulated by the school staff, should be a major thrust of curricular change from the beginning. Teachers will need specialized training designed to develop knowledge, skills, and attitudes related to curriculum integration and successful implementation of ITI. To plan and teach in teams effectively, teachers also must develop skills in collaboration.

Evaluation data from AEL's ITI project (Burns, 1994) confirm the rationale that effective professional development is focused both on content and process; sustained over time; assisted by a trained, external facilitator, or what Sizer calls a critical friend; and concerned with building local capacity. Based on these findings, a professional development plan to support ITI implementation should include

- week-long, residential summer institutes, led by staff who have both an understanding of the content and processes of ITI and broad experience in schools initiating change;
- on-site technical assistance provided by an experienced, external, change facilitator; and
- teacher involvement in action research that informs and improves their practice of ITI.

We have to have a knowledge base before we can move forward, whether it is articles we read, current research, or workshops we attend.

—Louisiana principal

Summer institutes. The rationale for attending summer institutes is two-pronged: (1) a team of teachers and principals can function as catalysts for change in their school; and (2) the best environment for developing team capacity is a summer residential institute away from the hubbub of school and the responsibilities of family (Maeroff, 1993). During ITI institutes, school teams gain information and resources to assist them in designing, implementing, and evaluating integrated curriculum; they develop team-building and collaborative skills; and they build a network for information-sharing with teams from other schools.

Successful team building at institutes is a careful blend of content and process, ensuring that a team has some substantial ideas with which to work, as well as the skills to collaborate and to involve others.

Gene Maeroff (1993).

On-site technical assistance. Although the training provided in summer institutes is in-depth and involves participants in constructing their own knowledge about ITI, a single training session is rarely

adequate to ensure effective implementation of an innovation as complex as ITI. Consultation and reinforcement activities, designed to address the unique needs of individual teachers and teams, should be provided as a followup to institute training. During AEL's ITI project, the facilitator conducted four workshops annually at each school. The purposes of the workshops were to offer additional ITI training and resources requested by the team members; to ease the change process; and to encourage experimentation, reflection, and collegial exchange.

Consultation and reinforcement activities, designed to address the unique needs of individual teachers and teams, should be provided as a followup to institute training.

In working with school reform over the past several years, Donahoe (1993) has observed schools struggle with the process of change. He concludes that schools need an external change agent to help them through the traumas of change.

> Among the factors that made change traumatic in our schools were a lack of leadership skills, unfamiliarity with recent research and practice, inexperience in consensus building, staff discord, the inability to prioritize and focus, the tendency to think in terms of staff problems rather than in terms of student needs, and a reluctance to step off into the unknown (or, rather, an inclination to take, once again, fatal half-measures). Without a change agent, only schools with an extraordinary staff or exceptional leadership will achieve meaningful change, and even for them it will be a long, long road, highly vulnerable to changes in staff. (p. 300)

Action research. Because teachers need to be involved in generating knowledge that informs their practice, action research should be incorporated into the professional development plan for a school initiating ITI. Action research is a collaborative activity that brings groups of practitioners (in this case instructional teams) together to study their practice for the purpose of engaging in action for improvement. The four phases of action research are *planning*, *action*, *observation*, and *reflection*.

To monitor the effects of curriculum integration, instructional teams must identify clear goals for their students, engage in reflective dialogue, and seek data-based feedback on their teaching from students, parents, supervisors, and peers. Instructional teams must recognize the importance of constructive self-criticism regarding their curricular designs, instructional methods, and alternative assessments. Also, staff must develop tools for monitoring team effectiveness and progress toward schoolwide goals for implementing ITI.

AEL's ITI project engaged school teams in collaborative action research to determine the effects of ITI on teaching and learning. Each team developed its own vision and goals for teaching and learning. During the project's first year, teams planned and taught integrated units. During and immediately after teaching their units, teams solic-

ited feedback from a number of sources (students, team members, administrators, parents, and others) to determine each unit's strengths and weaknesses. After reflecting on their data, team members redesigned units to be retested during year two. Team members designed student assessment instruments as well as unit evaluation forms and questionnaires for students, teachers, and others. Other data sources used by the teams to evaluate progress toward implementation goals included archival evidence (e.g., attendance records, discipline referrals, grade point averages), teacher and student journals, observational checklists, and interviews (Burns, 1994).

> *Creating a vision of a better school must include definitions of real outcomes and discussion of how they can be assessed.*
>
> Tony Wagner (1993)

Teachers who initiate curriculum integration must be willing to critique curriculum, instruction, and assessment as they are used. They must engage in data-based teaching, constantly seeking feedback on their performance from students, colleagues, supervisors, and others. They must become reflective practitioners who analyze and interpret data on their teaching and who use their research, as well as research conducted by others, to improve teaching and learning.

Teachers who initiate curriculum integration must be willing to critique curriculum, instruction, and assessment as they are used.

Reflection

- How would you rate the human resource climate in your school? To what degree are these key supports already present?
- What supports, resources, and behaviors will be needed to begin ITI in your school?
- How can time and fiscal and human resources in your school be used more effectively for professional development?

Condition Four: Facilitating Structures

When teachers work in teams, both students and teachers benefit.

Although individual teachers in self-contained elementary classrooms can use any of the frameworks described in Section I to integrate the curriculum, at the middle school and high school levels a team approach to instruction is necessary to achieve integration. Even at the elementary level, teaching and learning may be enhanced by a team approach.

Teaming is the most essential facilitating structure for curriculum integration in middle and secondary schools. However, for instructional teams to be effective, they must be supported by other structures. To organize teams without providing the necessary facilitating structures would be to set them up for frustration and failure. Because of its benefits, interdisciplinary teaming must be nurtured and supported.

Teachers at all instructional levels who have worked with a team have identified benefits of teaming for students and teachers. The promises of teaming for students include (1) transfer of learning, (2) sense of identity and belonging, (3) increased motivation, and (4) enhanced teacher-student mentoring. For teachers, the promises of teaming include (1) emotional support/encouragement and decreased isolation, (2) insight/knowledge for fellow team members, (3) shared responsibilities, (4) increased program effectiveness, (5) participatory problem solving and decisionmaking, and (6) increased authority and accountability.

Because of its benefits, interdisciplinary teaming must be nurtured and supported.

Teachers also have identified problems associated with teaming. On a personal level, teachers experience a loss of individual autonomy, and sometimes problems result from a lack of commitment of team members. However, most of the problems cited by teachers have to do with the structures that facilitate teamed instruction. They include (1) scheduling for common planning time, (2) block scheduling for teamed instruction, (3) flexible instructional space, and (4) adequate budget for resources and supports. When the faculty and administration are committed to curriculum integration, these facilitating structures are in place to support ITI.

Scheduling for Common Planning Time

If interdisciplinary teams are to be successful, they must have time to learn, to plan, and to evaluate their work. This time must be allocated during the school day and year. A school that is serious about curriculum integration must devise ways to reallocate time and redefine teachers' work. In other words, teachers, supervisors, parents, and others must recognize that teams of teachers need time to learn new instructional approaches, design integrated curriculum, develop alternative assessments, teach as a team, and evaluate their efforts. The notion that teachers are working only when they are in the classroom instructing students must be altered and teachers' work defined more broadly.

> *A goal in reallocating time should be to make it possible for teachers to do what is necessary to bring deep, lasting change to their schools.*
>
> Gene Maeroff (1993)

It is essential that interdisciplinary teams have noninstructional days within the school calendar devoted to developing integrated curriculum. Furthermore, they must have regularly scheduled, shared, planning time during the school day or week. (Some teams may prefer longer blocks of time every other day or once a week rather than a shorter block of time daily.) Not only do teachers need time to plan, they need time for reflection on their work.

During AEL's ITI project, each school team was provided with eight days of released time for work related to planning and evaluating integrated curriculum. Some of the schools used part of this time for professional development (e.g., attending conferences and visiting other schools that were using ITI). All but one of the school teams had a common planning period, in addition to an individual planning period. Teachers indicated that the released days were essential for completing unit plans, and that daily common planning time of one hour or less was not sufficient to design a unit. Common planning time was, however, essential for coordinating instruction, communicating with colleagues, and team building.

Block Scheduling for Teamed Instruction

Block scheduling permits two or more teachers of two or more subjects to teach those classes during the same block of time. For example, a ninth-grade English, social studies, and science teacher have the same three classes for the first three periods each day. These teachers have, in essence, a total of 150 minutes of instruction for the 75 students on the team. In a middle school, the English, science, social studies, and mathematics teachers in Grade 7 have the same four classes for five consecutive periods each day. These teach-

> *Ideally, all interdisciplinary teams will be scheduled on a block-of-time basis.*
>
> Elliot Merenbloom (1991)

ers are responsible for a total of 250 minutes of instruction for the 110 students on the team. In addition to their subject, these teachers may also teach reading, a skills lab, and/or a home-based advisory during this block of time. Their students may be assigned to physical education, art, and music for two periods per day. This allows the interdisciplinary block teachers to have team and personal planning time daily. In both of these examples, the team members determine, generally on a daily or weekly basis, how instructional time within the block will be used.

Block scheduling and flexible use of time within the block permit a team of teachers to develop a comprehensive integrated curriculum that responds to the particular needs of the students.

Another example of the block schedule seen frequently in high schools is known as macro classes or 4-period block. In this version, there are four 90-minute instructional blocks rather than six or seven 50-minute periods. Lunch is 50 minutes, with 10-15 minute breaks between blocks. Year-long classes under the traditional system are taught in a single semester; semester-length courses are taught in nine weeks.

There are several variations of block schedules. For more specific information on these and other plans, or on how to construct a block schedule, please see Section III or the resource section of this book.

Block scheduling and flexible use of time within the block permit a team of teachers to develop a comprehensive integrated curriculum that responds to the particular needs of the students. Block scheduling facilitates the flexible use of time in modules (amounts of time other than the usual period) by individual teams. When modules are utilized, frequency and duration of class meetings are determined by teachers. Flexible use of block scheduling suggests that the order of each school day need not be the same. Group size, the order of classes, and the length of each class or activity can vary. Also, subjects can rotate on a daily, weekly, monthly, or quarterly basis. These decisions are made based upon instructional tasks and needs of students.

Some block schedules may be difficult to design, and effective use of time within a block requires many decisions by teachers about student needs, content, and teaching strategies. However, block time should be viewed in terms of its benefits for students.

The four-period day added a lot of diversity to my teaching in a positive way.

—North Carolina teacher

Block scheduling allows for in-depth study or extended time in a particular activity (e.g., writing activity, laboratory experiment, service-learning activity, guest speaker), regrouping or subdividing students for individualized or small-group instruction, and working independently or in groups on projects. Such variety is important for students and teachers.

Block scheduling promotes a connected curriculum, encourages more productive models of teaching (instead of lecture and discussion), and provides a less fragmented, more thoughtful learning environment. It also promotes enrichment, acceleration, opportunities for

extended learning, and experiential learning. Schools that use block schedules also report reduced dropout and failure rates, fewer discipline problems, and increased attendance rate.

Block scheduling has benefits for teachers as well. Among the benefits cited by teachers in several schools that are using block schedules are

- 90-minute planning periods;
- fewer classes to prepare for;
- reduced teacher-student ratio;
- increased opportunity to use alternative instructional strategies, particularly laboratory and community-based experiences;
- time for field trips and guest speakers;
- more control of instructional time; and
- integration of two or more subjects.

The flexibility provided by block scheduling is a way of responding to students' developmental and individual needs. It also provides the structure for a total team program. Finally, flexible scheduling facilitates team building.

Block scheduling promotes a connected curriculum, encourages more productive models of teaching, and provides a less fragmented, more thoughtful learning environment.

Flexible Instructional Space

When teams of teachers use a block schedule, they have opportunities to use more varied instructional approaches, to control how time is used, and to group students in different ways for different purposes. To use these strategies effectively, they need flexible instructional space that can accommodate large and small groups as well as individualized instruction. If, for example, a team of four teachers has a common group of students for the first four periods of the day, the team may wish to begin with a large-group activity, such as a guest speaker or a film. Next, the teachers may choose to divide the group into four smaller classes for specialized instruction in academic content, providing disciplinary perspectives on the topic or issue being studied. These four classes may rotate from teacher to teacher. Later, they may choose to use paired teaching for specific activities that engage students in hands-on applications of specific concepts and skills. Each of these instructional approaches requires a different space.

To accommodate student needs and to team teach effectively, this team of teachers will need appropriate instructional space. First, the classrooms should be in close proximity. This facilitates planning, communication, and easy exchange of students for group work. Second, for paired teaching, a divided classroom (possibly two classrooms that are separated by a folding door) will be beneficial. This

By relocating classroom assignments, making minor adjustments in the facility, and using flexibility and creativity with existing space, administrators and teachers can facilitate ITI implementation.

arrangement is also helpful when teachers wish to have a permanent setup for learning stations, small-group and laboratory work, computer stations, or lectures/demonstrations. Third, they will need a large group space that can accommodate the entire team of students. This might be a room shared by others, such as a lecture room or theatre, or ideally, a space flexibly designed for various modes of instruction. Finally, the team will need a common planning area where desks and materials are located.

One West Virginia high school was designed, with the involvement of teachers, for teamed instruction in the humanities. To accommodate several three-teacher teams of social studies, English, and fine arts, three humanities centers (one for each grade level) were constructed. These large centers include "wet areas" for hands-on art work, individual study carrels, tables for small group work, several computers, a classroom-style setup, a mini-library, display space for student work, and private teacher-student conference space. In addition to using the humanities centers, teams may schedule time in a large lecture room designed for performances, speakers, films, etc.; in the writing (computer) lab; or in the library-media center.

The humanities teachers do not all have individual classrooms, but they have a number of classrooms they share for instructional use. For team planning and work space, they use a large humanities office that includes an open area with tables; an equipment and storage room that contains audiovisual and duplicating equipment, as well as shelves for books and other teaching materials; and three enclosed conference rooms.

Two new middle schools in Virginia and Arizona were designed to accommodate interdisciplinary teams. In both schools, a wing of the building was designed for each grade level. Each wing contains several individual classrooms, at least two double classrooms, a science laboratory, open instructional space, and common teacher work space. Grade-level teams use this space for all core (math, science, social studies, and English) instructional activities except those that require use of the library, little theatre, or computer lab. These facilities are located in the center of the building along with the cafeteria and offices. A separate wing of the building houses the fine arts and vocational areas.

Unfortunately, most school faculties will not have the opportunity to plan or to use such facilities. However, alterations and flexible use of existing space are possible.

At a Virginia high school, a double classroom was created by eliminating a wall between two classrooms and adding a folding door to accommodate large group space for two three-teacher teams. One team utilizes this space in the morning and the other in the afternoon block. Individual classrooms are located adjacent to the double class-

room or across the hall so that all team members are in close proximity during an instructional block. This arrangement helps team members coordinate instructional activities and utilize instructional space more effectively for their students. The librarian and business education teacher coordinate their plans with the team members and offer assistance and space for special activities (e.g., research, writing, graphic design, etc.). The team members also share a common planning room.

By relocating classroom assignments, making minor adjustments in the facility, and using flexibility and creativity with existing space, administrators and teachers can facilitate ITI implementation. In some schools, this may *literally* mean dissolving boundaries—the walls themselves, as well as the beliefs about use of space—that prevent a more connected curriculum.

Adequate Budget for Resources and Supports

Although most of the conditions that support curriculum integration and teamed instruction involve changes in beliefs and attitudes about teaching and learning, some of them involve changes in the way money is allocated and spent. It would be foolhardy to think that ITI could be implemented without an adequate budget to support curriculum development, staffing, professional development, acquisition of materials, and possibly alterations in the facility. Administrators and staff need to consider the extra costs they may incur and prepare the school budget accordingly. They may need to seek additional funding from the central office, grants, or community businesses or foundations. The following costs of ITI implementation should be considered when the budget is prepared:

- Team members need time during the summer and/or released days during the school year to develop integrated curriculum. This may involve additional compensation for those teachers and/or money for substitutes.
- When two teachers team teach a class, or when a team of several teachers work with a common group of students, the overall pupil-teacher ratio may be lower than normal and may create added staffing costs.
- Professional development and ongoing, external assistance are essential for successful ITI implementation. Summer institutes, the assistance of a trained change facilitator, and other opportunities for professional growth need to be budgetary priorities during the first few years of implementation.
- Because integrated curriculum does not rely solely on textbooks, teachers need to have access to other less traditional instructional materials. They may require compensated time to design some of

It would be foolhardy to think that ITI could be implemented without an adequate budget to support curriculum development, staffing, professional development, acquisition of materials, and possibly alterations in the facility.

Professional development and ongoing, external assistance are essential for successful ITI implementation.

their own materials. The school budget must include adequate money for instructional materials that are appropriate for integration.

- Some alterations in the physical facility may be necessary to support ITI. The principal should be aggressive in seeking funds from the school board or other local sources to support these changes when they are needed.

Most of the fiscal costs of ITI can be handled by the school and district with proper planning.

Most of the fiscal costs of ITI can be handled by the school and district with proper planning. What is needed is ***commitment*** to curriculum integration, because it may be necessary to change the way money is allocated (e.g., to teams rather than departments, for materials other than textbooks). Because the costs of professional development and curriculum development will be high initially, adjustments may need to be made in the total amount of funding for the school and in setting budgetary priorities. Therefore, it is prudent that a school staff focus its energies and resources on curriculum integration and forego involvement in other projects, at least during the first two years.

Reflection

Integrated curricula are not simply intellectual edifices; they must occur within the realities of school time and space. Coordinating both the concepts and the people requires a determined effort (Jacobs, 1989).

- What is the commitment of your staff to the concept of flexible scheduling?
- To what extent do you currently utilize block-of-time opportunities for interdisciplinary teaching?
- What are some of the special needs of your students that can best be met by using a block of time with a modular approach?
- What changes need to be made in the use of instructional space in order to facilitate ITI?
- How are budgetary priorities determined in your school? Who makes decisions about how money is allocated and spent? What fiscal resources will you need to prepare for ITI? What problems might you anticipate in securing these resources?

Conclusion

In Section II you have studied four conditions that are conducive to curriculum integration and teamed instruction—the supporting and enabling variables that are necessary to enhance reform of the teaching-learning process. You have considered the extent to which these conditions are already present in your school and assessed the need for change. Change seldom occurs unless there is some dissatisfaction. At this point you need to assess your dissatisfaction with the status quo of teaching and learning in your school and determine your readiness to begin preparing for curriculum integration.

Curriculum integration is a complex process. Without the supportive conditions described in this section, it will surely fail. Before embarking on the journey toward curriculum integration, staff members must be fully aware of the dynamics involved in creating the necessary changes in curriculum, instruction, assessment, and culture. All staff members must understand how they will be affected by the changes in school organization and structures, whether or not they are involved in integration. Most importantly, teachers must understand why curriculum integration is better for students. With these understandings, teachers will be more likely to implement the necessary changes.

Section III of *Dissolving the Boundaries* provides the next steps for those who are ready to begin the journey.

Section III

Preparing Teams for Curriculum Integration

Ready, Fire, Aim!

Selecting Teams

Team Structures

Developing Teams

Scheduling for Teams

Supporting Teams with Professional Development

Section III: Preparing Teams for Curriculum Integration

Those individuals and organizations that are most effective do not experience fewer problems, less stressful situations, and greater fortune, ***they just deal with them differently.***

—Michael Fullan (1993)

Having read the first two sections of *Dissolving the Boundaries* and engaged in personal reflection and collegial inquiry through these materials, you now have a better understanding of curriculum integration and the conditions that support it. You also have assessed your personal desire and your school's readiness to implement the indicated changes in curriculum, instruction, assessment, and classroom culture that are inherent in interdisciplinary teamed instruction in secondary schools. At this point, you and others on your faculty are ready to take the first steps in preparing for curriculum integration.

Ready, Fire, Aim

If there are only a few of your staff who are willing to take these first steps, don't be surprised or concerned. Others who have studied the change process (Fullan, 1993; Louis & Miles, 1990; Senge, 1990) explain that building commitment to change among your staff, developing a shared vision for your school, and planning strategies for change are evolutionary processes. Fullan, for instance, observes that "trying to get everyone on board in advance of action cannot work because... ownership cannot be achieved in advance of learning something new" (p. 30). Forcing those who are not yet ready to begin implementing ITI would be a grave error. Rather, those who are ready must begin, learn more as they engage in problem solving for successful change, and share their enthusiasm and new concepts and skills through collaboration with colleagues. Personal mastery and group mastery of the concepts and processes of ITI support each other in a dynamic learning organization.

Change in schools should begin, at least in part, with those most inclined toward and most sympathetic to breaking with the status quo.

Gene Maeroff (1993)

We looked more at teacher personalities and philosophies and were able to group our teachers more adequately than we had done in the past.

—Virginia administrator

For successful change, Fullan prescribes a sequence he calls ***ready, fire, aim***. In the ***ready*** stage, there has to be some notion of the direction you will take in implementing ITI—a basic game plan—but you should be careful not to bog down the change process with too much detailed planning before you know enough about the dynamic reality of ITI implementation in your school. The first two sections of this book have provided sufficient information to give you an idea of where you want to begin. In Section III, you will find additional information on how to move the ***ready*** group into the ***fire*** stage of implementation.

"***Fire*** is action and inquiry where skills, clarity, and learning are fostered" (Fullan, 1993, p. 31). In forming teams for ITI, securing the supports and facilitating structures for change (e.g., developing or refining a block schedule), and engaging in inquiry and experimentation, you will increase mastery of the concepts and processes of ITI. This stage may continue for a year or more.

As the first ITI teams in your school plan, implement, and evaluate their efforts, they must collaborate with others through team building, mentoring, and peer relationships. It is through collaboration that your faculty can move into the ***aim*** stage of curriculum integration. At this stage, they crystallize new beliefs about teaching and learning, formulate mission and vision statements, and focus strategic planning for curriculum integration.

Selecting Teams

The first step toward integrating the curriculum is forming teams. Consensus among most principals and teachers who have implemented ITI is that volunteerism is the best approach. They believe it is preferable that members of teams participate out of conviction—not simply because they were asked, ordered, or elected to do so. If volunteers for curriculum integration have not yet asserted themselves at your school, the principal may need to use a simple survey to determine staff interest. To identify prospective team members and those with whom they may be most compatible, teachers might be asked to indicate several others with whom they would most like to work on a team.

Some educators assert that having those on the initial team who are most favorable to change may not necessarily ensure success, unless they are also the right people to bring others along. It is, of course, desirable to assemble pilot teams in which the members have potential for working together and for becoming leaders in the school. With this philosophy in mind, one middle school principal asked each teacher in the school to submit a list of the names of colleagues whom

each considered to have the greatest credibility. At the same time, the principal asked those who wanted to volunteer for ITI to submit their own names. Then he chose the teams by matching the list of volunteers with the list of those whom peers deemed most credible.

Most administrators in AEL's ITI project indicated that commitment to ITI and compatibility—of personalities and core beliefs about teaching and learning—were the keys to successful teams (Burns, 1994). A few felt that team members should "challenge each other." One administrator in the project said that a team might be compared to a cooperative learning group: "one member who is gung ho, who will be the leader; two more who are willing to try it and give it a chance; and one whom you have to pull along."

> *Effective collaborations operate in the world of ideas, examining existing practices critically, seeking better alternatives, and working hard together at bringing about improvements and assessing their worth.*
>
> Fullan and Hargreaves (1991)

Usually an effective team is comprised of individuals with complementary rather than similar talents and teaching styles. The team must use the special talents of each member rather than force everyone into a common mold where all think and act alike. Diversity gives the team an edge in meeting the needs of all students. Team members should, however, have three characteristics in common: ***energy***, ***persistence***, and a ***commitment to change***.

Whatever process is used to select teams, the following general guidelines can help (Maeroff, 1993):

- The choice of who is on a team probably should not be imposed, which means that even a principal who names a team(s) should consult with others.
- Efforts should be made to include some of those in the building who are already leaders or who have the greatest promise of becoming leaders.
- The diversity of the faculty and the student body should be considered.
- Efforts should be made to maintain team continuity. Someone who is not apt to remain in the building for several years may not be an appropriate choice.
- A balance of subject areas is important.

The personalities of individual team members, their teaching styles, and the leadership provided to the team all affect the quality of teamwork and the achievement of learner outcomes.

After pioneers for teaming have been identified, they and the principal jointly should decide which team structures are most appropriate for them.

Choose people who are flexible—your brightest and best. They tend to be the leaders.

—Virginia administrator

Team Structures

Two types of teams, grade level and multiage, are seen most frequently in secondary schools. The number of team members, the traditional fields of knowledge they represent, and the degree of curriculum integration vary from school to school as well as within a given school. The following paragraphs describe real school structures for grade-level and multiage instructional teams. These structures vary in the degree of curricular, instructional, and organizational change required for implementation. Each structure is described in general terms. The description should not be taken literally, as a recipe, but rather as a set of general guidelines for team organization. As with the stages of curriculum integration discussed in Section I, several team structures may exist in any school, and schools will need to modify the structures to suit their own purposes.

Middle School Teams

In middle and secondary schools, grade-level teams may coordinate instruction horizontally within a discipline and / or integrate across disciplines. Interdisciplinary grade-level teams frequently are utilized in middle schools. Each grade may agree upon a theme that will be the instructional focus for a grading period or the full year. Interdisciplinary teams, generally composed of core teachers and at least one related arts teacher, are responsible for planning instruction around that theme. Generally, middle school teams also provide exploratory options for students by offering short-term elective courses or miniunits. In addition, each team may be organized into teacher-student advisory groups.

At one Virginia middle school, teaching staff are organized into grade-level interdisciplinary teams that plan and carry out instruction focused on yearly schoolwide themes. Team members represent the core content areas of English, social studies, and science, as well as related arts. Each core teacher is responsible for grade-level math instruction. Related arts teachers, who form a team, participate in interdisciplinary units during each six-week rotation of their exploratory classes. Grade-level team members share daily common planning time and have individual planning time as well. Flexible scheduling allows team members to structure their school day. In addition to their participation in a four-period block, team members teach either a minicourse (short-term electives planned around student interests) or an exploratory course in the related arts (music, art, agriculture, etc.) Each teacher also participates in the school's student advisory program for one period daily.

A middle school in Kentucky utilizes both grade-level and multiage interdisciplinary teams. Students in Grades 6 through 8 are heterogeneously grouped in interdisciplinary teaching teams composed of five teachers (English, math, social studies, science, and special education). Multidisciplinary and interdisciplinary units are frequently used, and teachers employ strategies such as cooperative learning and cross-age tutoring.

One of the teams is multiage, composed of approximately 150 sixth-, seventh-, and eighth-grade students. The multiage team uses performance level as an alternative to grouping by age or grade. According to the teachers, this arrangement encourages peer support, peer tutoring, and individualization of the curriculum. It allows for flexibility of content and instructional time and reconceptualizes the student's role in learning.

At this middle school, teachers meet in committees to create the school schedule. Each team is responsible for scheduling its own students and for determining how its block of time will be used. For example, each team includes teacher-based guidance as part of its curriculum. For this program, teachers schedule daily class time to meet with small groups of students to explore new ideas, discuss concerns, or participate in noncompetitive intramurals. Another team provides instruction in conflict resolution and peer mediation for all students, and small groups of students are trained to serve as mediators of disputes between their peers.

High School Teams

In senior high schools, grade-level teams may coordinate instruction horizontally within a discipline and/or integrate across disciplines. Some high schools use a school-within-a-school approach that places students in magnet, alternative, pilot, or other special instructional programs with a team of teachers. In some cases the entire school is divided into smaller, autonomous learning communities called charter schools or houses. This method of restructuring allows a group of perhaps 200 students and eight teachers to design a schedule that keeps the same students and teachers working together throughout the day and encourages teachers to integrate their courses. Other schools choose to integrate around schoolwide or grade-level themes, with departments or individual teachers maintaining control over when, how, and to what extent they will participate in integrated activities.

Most frequently in high schools, teams of two, three, or more teachers use a multidisciplinary or interdisciplinary approach to sequence or coordinate curriculum in several content areas or between academic and vocational areas. Common examples of these programs

include American studies courses that integrate American history and literature; humanities programs that integrate instruction in English, social studies, and fine arts at one or more grade levels; and integrated academic/vocational programs in applied math and/or science.

Most frequently in high schools, teams of two, three, or more teachers use a multidisciplinary or interdisciplinary approach to sequence or coordinate curriculum in several content areas or between academic and vocational areas.

At a California high school, ninth and tenth graders all take a two-year required science program linking major concepts in physics, chemistry, earth science, and life science, corresponding with the school's humanities curricula. "Patterns of Evolution and Change," the first-year science course, connects with the first-year humanities curriculum, "Patterns and Cultures." In the second year, "Science Through All Time" connects with the humanities theme, "How do People Govern Themselves?" This program provides a good example of teaming for integration within ***and*** across disciplines.

At one rural Virginia high school, three teams of three teachers each coordinate instruction in English, world geography, and earth science for the entire ninth-grade class. Each teaching team works with approximately 70 students who are heterogeneously grouped in a three-period instructional block. Teams are responsible for scheduling and grouping students within the blocks for individual, small-group, and large-group activities. Adjacent classrooms with sliding doors allow individual class groups or larger groups to utilize the space. The team members share daily common planning time and have individual planning time as well. In addition, each team member teaches one class outside the block. Most units are parallel or multidisciplinary and focus on topics, skills, and concepts derived from the world geography or earth science curriculum. Although most instruction is carried out by individual team members, there are large-group or overlapping, integrated, instructional activities planned for each unit. For example, great scientists and their discoveries are used as topics for teaching research skills in English and referenced in their proper geographical location in world geography.

A few miles away, another high school has designed a two-year, elective, core program for ninth- and tenth-grade students. Three-member teams at each grade level, composed of English, social studies, and science teachers, integrate instruction around the theme of "Great Cultures Past and Present." In the same school, another group of four teachers integrate instruction in a multiage school-within-a-school program for senior high at-risk students.

Multiage teams are in place at an alternative high school in Michigan. At this school, a transdisciplinary curriculum focuses on the core competencies of problem solving, communication, inquiry, social interaction, citizenship, and aesthetics. Students select three subject areas (e.g., science, social studies, and electronic arts) through which they explore issues, themes, and the use of core skills. Courses combine two or three disciplines in two-and-one-half hour blocks of

time, and teachers link big ideas across subjects. Students set learning goals, engage in real-world experiences, consult experts, and participate in job shadowing. Teachers tutor, advise, and monitor student progress. Assessment includes feedback from teachers, peers, and community resource people, as well as student-developed portfolios that illustrate accomplishments in the core competencies.

Another team structure, compatible with those already described, is becoming more prevalent in high schools today. With the requirement of the Perkins Act to integrate academic and vocational content, various models for accomplishing this federal mandate have been tried in comprehensive and vocational high schools across the country. Grubb (1991) describes eight models for the integration of academic and vocational content, several of which require a team structure. For example, the "curricular alignment" approach changes the content of both academic and vocational courses—using more occupationally relevant material in academic courses and more academic or basic education in vocational courses—and then links the two (p. 37). One pilot site described by Grubb has seven curriculum teams involving about half of the faculty, with 9 to 12 teachers per team; each team, composed of teachers from academic and vocational departments, meets weekly to develop integrated curricula. In addition, groups of two or more teachers may break away from a team to develop their own forms of alignment. The crucial element of alignment is that vocational and academic teachers work together to coordinate their offerings so that students experience courses that are consistent and mutually reinforcing rather than disconnected.

Another academic-vocational team structure described by Grubb (1991) is the Academy Model.

> Academies generally operate as schools-within-schools. Typically, four teachers collaborate in an academy, one in math, one in English, one in science, and one in the vocational subject that is the core of the academy. Each class of students takes all four subjects from these teachers (known as block rostering), and they stay with the same teachers for two or three years. Other subjects...are taken in the 'regular' high school outside the academy structure...The basic academy structure provides substantial opportunity for both horizontal alignment, as teachers coordinate the topics they teach, and vertical alignment, since teachers stay with the same group of students for two or three years and can adjust the sequence of topics over time. (p. 46-47)

In occupational high schools and magnet schools, the academy model is used in clusters of related vocations (e.g., health-related professions, agricultural sciences).

A school faculty should carefully consider both the promises and the implementation challenges of the various team structures . . . .

In summary, ITI involves a group of teachers (usually two to five) providing instruction to a group of students. In some cases, teachers may plan together during common planning time and then return to their individual classrooms to work independently with their classes. In other cases, teachers may plan cooperatively and actually teach together, bringing students together for large-group instruction and regrouping them for small-group instruction according to interest, achievement level, or special projects. Finally, team teaching might include teachers working together to correlate content and skill development on a regular, systematic basis or to present a thematic study as they teach different subjects to a common group of students.

An overall plan for ITI in a given school could involve any of the optional team structures with variations in the size of individual teams. A school faculty should carefully consider both the promises and the implementation challenges of the various team structures, and determine which are most conducive to the school's goals and the students' needs.

Reflection

Teachers and administrators should answer these questions and then prepare a pattern of team organization.

- For your school, what are the advantages and limitations of each type of team?
- For your school, what are the advantages and limitations of two-, three-, four-, or five-teacher teams? Where might any or all be used most effectively?
- What implications do the various structures have for teachers in academic and vocational subjects?
- Does your planning team or faculty have a preference for an overall plan or structure for teaming?
- Which team structure(s) will be most effective in attaining your school's goals and meeting your students' needs?

> *While individual learning is important, it is collective learning that will mark the success or failure of an organization. We must become more intentional about forming groups of learners and about establishing practices that allow us to think together. A committed group that is intentionally increasing its capacity to create desired results is magic; learning to be such a group takes practice.*
>
> Sue Miller Hurst, Director—The Educare Project

Developing Teams

Teamwork depends on reasonable autonomy for teams to create their own policies, schedules, activities, curriculum plans, and systems for monitoring student performance. However, it may take years to build a team that can fully implement ITI. Expecting advanced practices too soon will only frustrate teachers new to teaming. At the same time, teams cannot just evolve. There must be expectations for their initial work together and support for their efforts from colleagues and administrators. Fleming (1989) offers a nine-step model for team development:

- Clarifying roles and responsibilities
- Exploring group and individual roles
- Communicating and sticking with procedures
- Educating team members about how decisions are made
- Promoting team commitment to decisions
- Managing and resolving conflict
- Identifying team strengths and weaknesses
- Establishing performance goals
- Recognizing and rewarding cooperation

> *The needs of students must ultimately justify what occurs in the name of team building, however indirect the road to that goal may be.*
>
> Gene Maeroff (1993)

Although they have a life of their own, instructional teams connect to other organizational structures. They connect to the school guidance program to make it easier for counselors to reach students who need special attention. They integrate resource teachers and special education students to provide inclusive instruction. They relate to departmental and / or other instructional teams' activities that

ensure curriculum coordination and articulation between grade levels and in the transitions between schools. In short, the instructional teams work ***with*** instead of ***in addition to*** other school structures. Principals should clarify and communicate to all staff members the roles and responsibilities of instructional teams and their relationship to the rest of the faculty.

The principal's (or assistant principal's) involvement with teams also enhances effective teamwork. An administrator should attend as many team meetings as possible, playing the role of observer and consultant—not chairperson. Principals help teamwork grow by listening to teams' ideas and focusing on teams' concerns, by modeling the behaviors expected in teachers' relationships with students and with each other. Encouraging innovation in teamwork also enhances team development.

Each team member should have a specific role.

Other factors that contribute to successful development of teams are leadership and organization. Almost all effective teams have a **leader**. Whether selected by the team or the school principal, the team leader must be able to work with both teachers and administrators. The team leader facilitates team meetings, serves as liaison between the team and the principal and between the team and external consultants, and performs other duties for the team. The good leader is well-liked, trusted, efficient, and task-centered.

Fleming defines other team roles that contribute to effective teamwork:

- **Recorder**—Keeps written records of team planning, decisions, and agendas. Makes copies for all team members.
- **Timekeeper**—Helps team to stay focused. Alerts team to the time remaining at regular intervals.
- **Intelligence Officer**—Conducts library research on topics. Monitors electronic networks and bulletin boards. Seeks promising programs and practices and collects journal articles and other materials to inform and assist the team's work.
- **Process Observer**—Reflects on patterns of communication, decisionmaking, problem solving, and conflict resolution. Gives feedback on behaviors that help or hinder group work. (All members should assume this role at some time.)

Each team member should have a specific role: everyone should be responsible for something. Some teams choose to rotate roles annually.

By addressing the following questions, those who will pioneer ITI can strengthen team development and begin to formulate an implementation strategy for the coming year.

1. **Who are we?** (Do we have more than one team? What content areas/grade levels are represented? Who works together? What team structures will we adopt?)
2. **What will we do together?** (What are our goals and tasks for implementing ITI next year?)
3. **What are the promises/problems of our work together?** (What individual strengths do team members have? What are we already doing well? What are some areas for improvement? What organizational structures need to be changed? What problems/concerns need to be addressed?)
4. **How will we get there?** (What solutions might we suggest for the problems we have identified? What needs to be done to facilitate ITI in our school? What are the responsibilities of individual team members?)
5. **How will we know when we get there?** (How will we assess the effects of ITI on our students?)
6. **How are we doing?** (How will we monitor and evaluate our progress as a team?)
7. **What did we find/how did we do?** (How will we document and report our progress? How will we celebrate our success?)

Scheduling for Teams

The work of teams should occupy the top of scheduling and planning priorities. It is vital that teams have time to plan together, share the same students, and have flexibility within longer blocks of time to schedule student-learning experiences within the time and space provided. In the middle school, block scheduling is easier to implement because of the absence of Carnegie units and the time requirements they impose. Although state and local mandates specify daily and weekly instructional-time requirements for middle schools, they generally are divided between core subjects and exploratory classes and represent a total rather than a specific number of periods for each subject. Therefore, flexible schedules are more frequently utilized in middle schools than in high schools.

> *Teachers do not have the time to prepare for change, let alone implement it.*
> Gene Maeroff (1993)

Components of middle school such as team teaching, advisor-advisee programs, and skill development rely on a flexible master schedule. In most secondary schools, the schedule is created by the school administrators. In the effective middle school, it is desirable for team leaders to have an active role in the design of the schedule.

The middle school master schedule is an overall outline that permits flexible modular strategies. Core teaching teams subdivide their 250 minutes into six or seven modules so that students have a reading program and guidance activities in addition to core classes. During the remainder of the day, students participate in exploratory classes (e.g., art, music, technology education, etc.) while the core team has planning time.

An effective way to change the high school schedule is to have students take fewer courses at any one time and to build longer periods and more flexibility into the daily schedule.

Scheduling decisions in a middle school generally depend on several factors: (1) the program of studies for each grade level, (2) team structures and the number of teachers on a team, (3) student-grouping procedures, (4) student enrollment in exploratory and elective courses, and (5) the way in which students are assigned to teams. By the end of the scheduling process, each student should be assigned to a team, properly placed academically, and enrolled in the elective requested (Merenbloom, 1991).

An effective way to change the high school schedule is to have students take fewer courses at any one time and to build longer periods and more flexibility into the daily schedule. One such plan is the Copernican Plan developed by Joseph Carroll, a former Massachusetts school district superintendent. Alternative schedules and macroclasses are used in the Copernican Plan. Students take either one 4-hour class each day for 30 days or two 2-hour classes for 60 days. Either way, the full day includes time for seminars, study help, physical education, music, other activities, and lunch. Each student enrolls in six macroclasses per year, for a total of 24 in four years.

There are several alternatives to the original Copernican Plan. Canady and Rettig (1993) describe two plans in use in a number of schools.

In the 75-75-30 Plan, the school year is divided into three blocks of time—two 75-day terms and a 30-day term. During each 75-day term, the school day includes three 112-minute block classes, one 48-minute period (which remains constant for 180 days), 24 minutes for lunch, and 12 minutes for class changes. This scheduling plan is frequently referred to as a 4 x 4 block because students enroll in four classes during each 75-day term. For example, in the fall term a student might attend English for periods one and two, social studies for periods three and four, lunch, a singleton class such as band during period five, and physical education for periods six and seven. If the school day must be shorter or if more time is needed for lunch or class changes, block classes can be reduced in length.

The 30-day term, usually in the spring, offers students the opportunity to study one or two subjects intensively, repeat a failed course, or take part in service-learning, travel-study, or other special projects.

The Copernican Plan and the 75-75-30 Plan offer a number of benefits:

- They facilitate a variety of instructional approaches.
- Both teacher and student workloads are reduced, and teachers have more opportunities to develop rapport and to address individual students' needs.
- Instructional time is increased and focused on fewer subjects.
- Back-to-back blocks of complementary subjects (e.g., math and science) promote interdisciplinary teaming.
- Possibilities for acceleration and remediation are provided during the regular school year. This eliminates the costs of summer school for the district.

An Alternate-Day block schedule, described by Canady and Rettig (1993), might serve for some schools as a first step toward implementation of the 75-75-30 Plan. In this model, it is possible to offer seven classes by conducting three periods of 104 minutes on an alternate-day basis and one period of 52 minutes each day. For example, on Monday, students would attend humanities classes (e.g., English, social studies) during blocks one and two, fine arts during block four, and band during block three. On Tuesday, students would attend geometry, science, and physical education during blocks one, two, and four, and band again during block three. In some high schools, vocational and academic classes might meet on alternate days.

Some teachers (e.g., foreign language, band, math) feel that daily instruction is necessary in their discipline. One way to accommodate this need is to assign such classes to the singleton block that meets daily. Another possibility is to run a traditional six- or seven-period schedule three days a week and double periods twice weekly. In this model, every class meets four times per week with one of the sessions being a double period. The longer blocks are scheduled on consecutive days, and they provide opportunities for laboratory work and special projects.

Some schools combine the 75-75-30 and Alternate-Day Plans to realize the benefits of each. Because two teachers of related subjects are assigned the same two groups of students on alternate days for a term, interdisciplinary teaming is supported. Canady and Rettig (1993) offer an example.

> For a fall term of 75 days, an English teacher could be assigned 25 students for the first five periods of Day 1 and another 25 students for the same periods on Day 2. A social studies teacher could be assigned the same two groups on opposite days. Using a team approach, the first five periods of the day could be scheduled flexibly. For example,

Decisions about team structure, size, and integration models to be used must influence scheduling decisions in the high school.

> they could teach each of their two groups every day for two and one-half periods; they could instruct single groups for five periods on alternate days; they could occasionally work with both groups together. Also, the teachers could choose to work with one group consecutively for a predetermined period of time, and then exchange. The remaining two periods each day would be scheduled for teacher planning and the students' electives. (p. 314)

Decisions about team structure, size, and integration models to be used must influence scheduling decisions in the high school. Once an overall plan for curriculum integration is in place and teams are formed, the administrators can develop the master schedule. For example, the decisions about what courses will be integrated (e.g., social studies and English; math and science; agriculture, science, English, and geography; astronomy, electronics, and physics) will determine what courses are scheduled on what day during each term, in any of the block-schedule plans described in this section.

Supporting Teams with Professional Development

External assistance is a major resource for any change effort. Louis and Miles (1990) found that external assistance—for at least 30 days a year—was essential for successful change implementation. For teams of teachers and administrators who will implement curriculum integration, professional development is essential both prior to and during initial implementation. The professional development experiences for teams in the preimplementation stage should include (1) intensive training in the concepts and processes of ITI, (2) opportunities for team building, (3) training in instructional techniques and alternative assessments that support curriculum integration, and (4) time to plan and design curriculum. During initial implementation, teams need ongoing technical assistance provided by a trained facilitator, as well as time to plan, work, learn, and reflect together.

Summer institutes offer the optimum setting for team building and for learning about ITI . . . .

Summer institutes offer the optimum setting for team building and for learning about ITI and its curricular, instructional, assessment, and classroom-culture components. These summer institutes generally last from one to two weeks and are held in a residential setting where teams are free from the constraints of other responsibilities. Before selecting a summer institute experience, use the following criteria to determine its potential for your staff:

- The agenda should facilitate team building and include adequate time for teams to work ***and play*** together.
- There should be opportunities for networking with other schools.

- The agenda should address concepts and processes of curriculum design, and include attention to instruction and assessment in an integrated curriculum.
- The agenda should include training in change facilitation for administrators.
- The institute leader(s) should be knowledgeable about curriculum integration and experienced in working with teams.
- The setting should be comfortable and conducive to team building.

Expenses for a summer institute are usually supported by the school district or the school through professional development monies or special allocations for school improvement and restructuring. Occasionally, foundations or businesses provide partial or total support for the experience. The expenses include room and board, transportation, and fees for registration and/or materials. Some school districts award stipends and/or recertification credit to the participants. School administrators must give priority to these needs when they develop the annual budget.

> *Although the members of a team may not see eye to eye on every point, enough time should be spent in conversation to enable the team to reach consensus on its major aims.*
>
> Gene Maeroff (1993)

When teams return from a summer institute, they will more than likely need additional time before school begins to complete curriculum designs and instructional plans. This time should be supported financially by the district, either by allowing waivers for professional development days or by additional salaried days beyond the teachers' contract period.

Finally, teams must consider and plan for various kinds of ongoing technical assistance. They should visit other schools that are using ITI. They should select professional conferences that provide a variety of information and experiences related to curriculum, instruction, and assessment. They should subscribe through the school library and on their own to appropriate professional journals. Most importantly, they should seek the assistance of a trained, external facilitator. This might be a central office staff member or a consultant from another education organization. In any case, it should be a person who understands change theory, as well as the concepts and processes of ITI. This help will be invaluable as teams experience the inevitable conflicts and problems associated with change.

Final Reflection

In a school, everything important touches everything else of importance. Change one consequential aspect of that school and all others will be affected... We are stuck with a school reform game in which any change affects all, where everyone must change if anything is to change. (Sizer, 1991, p. 32)

- What are your next steps in implementing ITI? What resources and assistance do you need to get there? Who will be responsible for attaining these needs?
- What boundaries to curriculum integration still exist in your school or district? How can you begin to dissolve these boundaries?
- What methods of communication will be most effective for sharing and gaining support for your plans for curriculum integration? Which groups will you communicate with regularly: central office? school staff? students? parents? community members?
- How will each of these groups be involved in curriculum planning?
- What is the timeline for implementing ITI in your school? Who will receive initial training in ITI? What responsibilities will they have for mentoring with other staff?

The answers to these questions provide an action plan for curriculum integration in your school. You are ***ready*** to begin the journey!

To get the needed gains for kids, we adults must expect and endure the pain that comes with ambitious rethinking and redesign of schools.

Theodore Sizer (1991)

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Helpful Organizations

All of these organizations offer publications related to school improvement. Many offer workshops, conferences, and consulting services.

Appalachia Educational Laboratory
P.O. Box 1348
Charleston, WV 25325
800/624-9120
[Offers summer institutes for curriculum integration and other resources.]

Association for Supervision and Curriculum Development
1250 N. Pitt Street
Alexandria, VA 22314-1403
703/549-9110

Carnegie Council on Adolescent Development
2400 N Street NW, Sixth Floor
Washington, DC 20037-1153
202/429-7979

Center on Organization and Restructuring of Schools
University of Wisconsin-Madison
1025 W. Johnson Street, Suite 659
Madison, WI 53706
608/263-7575

Center for Research on Effective Schooling for Disadvantaged Youth
The Johns Hopkins University
Education R&D Center
3505 North Charles Street
Baltimore, MD 21218
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National Association of Secondary School Principals
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Appendix
Sample Units

PARALLEL DISCIPLINES

FOCUS: Thoreau's Pond **GRADE LEVEL:** 10-12 **TIME FRAME:** Two-three weeks

GOALS FOR STUDENTS:

- Understand differences between the scientific and nonscientific points of view.
- Appreciate literature from both an aesthetic and a scientific point of view.
- Develop skills of observation and analysis and draw appropriate conclusions.
- Apply knowledge to solve new problems.
- Communicate effectively in speaking and writing.

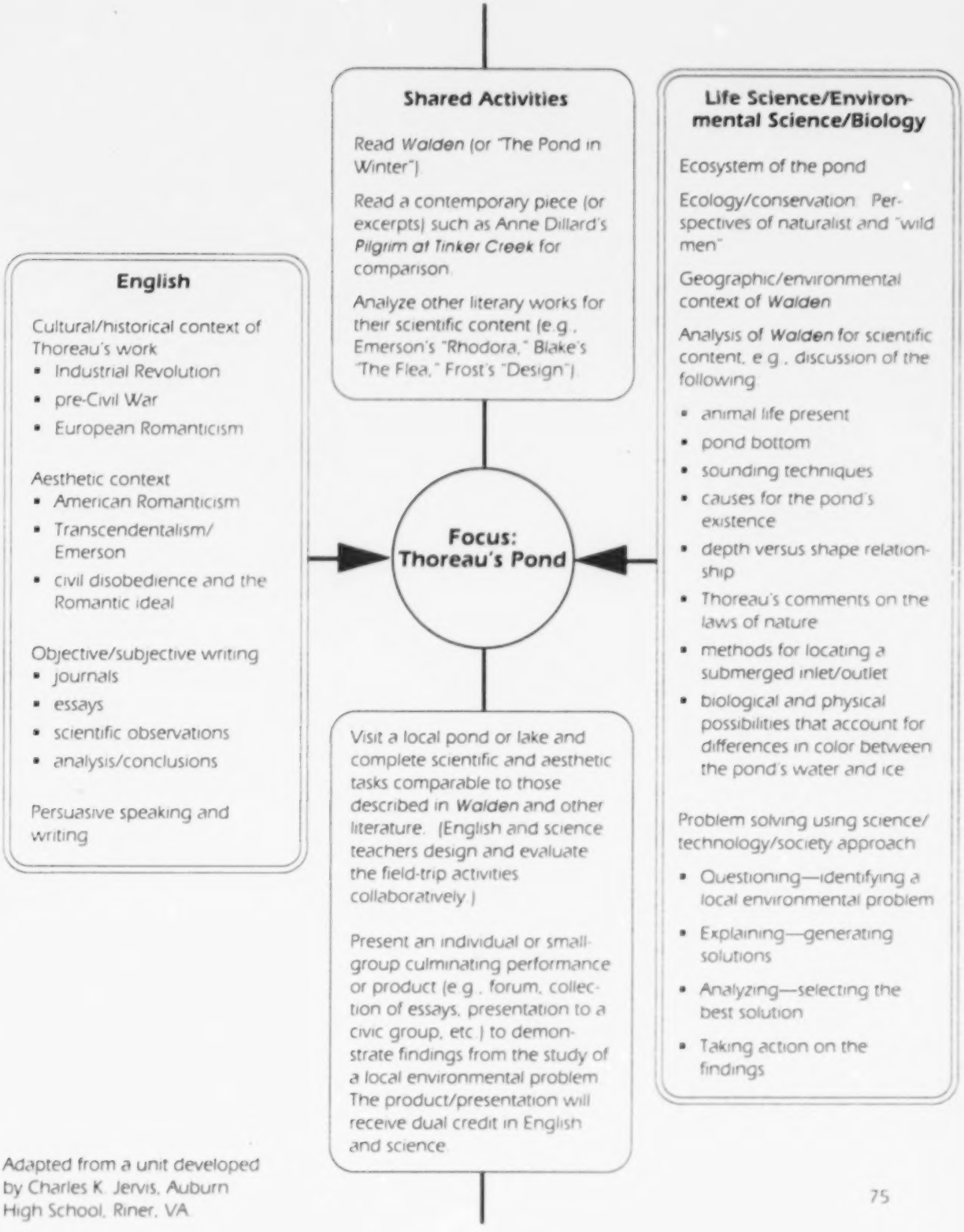
Curriculum. The curriculum in this unit focuses on content and procedures from the disciplines of English and biology/life science/environmental science. Disciplinary content is sequenced so that students study the work of Henry David Thoreau in American literature during the same time they study scientific issues related to the pond. Although most examples of the **parallel disciplines** stage of integration do not indicate more than resequenced curricula, this unit demonstrates connection making and shared inquiry between two disciplines.

Instruction. Although each teacher is a content specialist, the shared activities promote a more generalist perspective on curriculum. Most learning activities are teacher-directed. However, teachers are not limited to lecture, textbooks, or teacher-student questioning as the sole methods for presenting content, such as historical and aesthetic contexts or the scientific content of *Walden*. Students are challenged as they read to develop questions (and answers) on the scientific content to pose to their peers. The contexts for *Walden* might emerge in a Socratic seminar or structured group task. The science/technology/society (S-T-S) problem-solving activity and the visit to a local pond/lake are constructivist activities: that is, they both engage students in active learning and help them to construct knowledge by applying what they have learned about ecology and conservation in an authentic context.

Assessment. Assessments are summative and include standardized comprehension tests that accompany literary selections and science textbooks. Alternative assessments, such as the S-T-S environmental problem solving, culminating activity and the completion of teacher-designed tasks for a local pond visit, are used as well. Teachers also use formative assessments (e.g., group participation, journal writing, reader-response logs, pop quizzes, etc.) to monitor student understanding of content.

Classroom culture. The fact that two teachers cooperate on this unit helps to create a more cooperative climate in both classrooms. At times the student role is passive, particularly when the teachers use lecture and whole-class discussion. The problem-solving activity, however, does encourage active learning and student self-direction.

PARALLEL DISCIPLINES


Shared Activities
Read Walden (or "The Pond in Winter").
Read a contemporary piece (or excerpts) such as Anne Dillard's Pilgrim at Tinker Creek for comparison.
Analyze other literary works for their scientific content (e.g., Emerson's "Rhodora," Blake's "The Flea," Frost's "Design").
English
Cultural/historical context of Thoreau's work
Industrial Revolution
pre-Civil War
European Romanticism
Aesthetic context
American Romanticism
Transcendentalism/ Emerson
civil disobedience and the Romantic ideal
Objective/subjective writing
journals
essays
scientific observations
analysis/conclusions
Persuasive speaking and writing
Focus: Thoreau's Pond
Life Science/Environmental Science/Biology
Ecosystem of the pond
Ecology/conservation. Perspectives of naturalist and "wild men"
Geographic/environmental context of Walden
Analysis of Walden for scientific content, e.g., discussion of the following:
animal life present
pond bottom
sounding techniques
causes for the pond's existence
depth versus shape relationship
Thoreau's comments on the laws of nature
methods for locating a submerged inlet/outlet
biological and physical possibilities that account for differences in color between the pond's water and ice
Problem solving using science/ technology/society approach
Questioning—identifying a local environmental problem
Explaining—generating solutions
Analyzing—selecting the best solution
Taking action on the findings
Visit a local pond or lake and complete scientific and aesthetic tasks comparable to those described in Walden and other literature. (English and science teachers design and evaluate the field-trip activities collaboratively.)
Present an individual or small-group culminating performance or product (e.g., forum, collection of essays, presentation to a civic group, etc.) to demonstrate findings from the study of a local environmental problem. The product/presentation will receive dual credit in English and science.

Adapted from a unit developed by Charles K. Jervis, Auburn High School, Riner, VA.

MULTIDISCIPLINARY

FOCUS: Roman Civilization **GRADE LEVEL**: 10-12 **TIME FRAME**: Three-four weeks

GOALS FOR STUDENTS:

- Understand cultural patterns past and present.
- Recognize interrelated patterns and ideas in great literature of all disciplines.
- Appreciate the contributions of past civilizations and their influence on our culture.
- Understand peoples, issues, and systems.
- Gain insights into how our own and other cultures have developed.
- Appreciate diversity and cultural differences.
- Examine connections between the humanities and other disciplines.

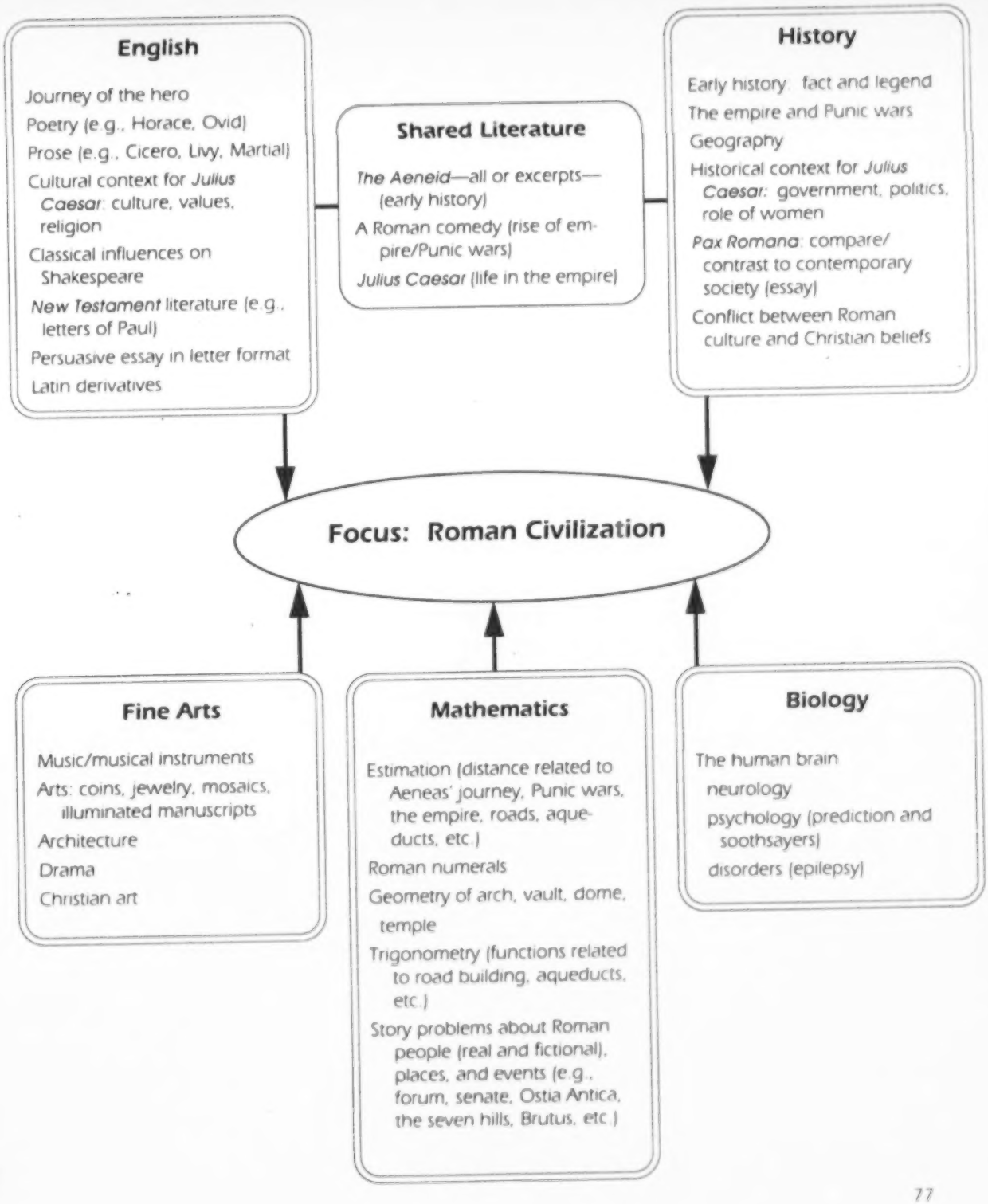
Curriculum. The curriculum in this unit focuses on content and procedures of five disciplines: English, history, biology, fine arts, and mathematics (the Latin teacher may serve as a resource or guest teacher when appropriate during the unit). Disciplinary content is resequenced and revised to fit the unit topic. English, history, and biology teachers coordinate instruction throughout the unit. Fine arts teachers participate periodically or for approximately two weeks. Depending on the extent to which they have students in common with the English, history, and biology teachers, mathematics teachers participate during all or part of the unit. This unit is part of a three-year humanities program.

Instruction. The teacher's role is that of content specialist. However, English and history teachers share literary selections as their primary texts. History textbooks are used only as references. Although lecture is an occasional instructional strategy, students more frequently engage in activities such as Socratic seminars and individual and small-group investigations that help them construct their own knowledge. Most learning takes place within the classroom, but visiting museums, attending theatrical performances, or taking neighborhood architectural tours can enrich student learning.

Assessment. Summative assessments include teacher-developed tests in the content areas. However, alternatives are used as well. Students work individually and in pairs on performance-based tasks, such as organizing and annotating a scrapbook of Roman art and architecture; producing a video on epilepsy as it affected Caesar; designing a Trivial Pursuit game on Roman civilization; or creating a mosaic or illuminated manuscript to illustrate some aspect of Roman life. Teachers serve as an interdisciplinary evaluation team. Dual credit is awarded in two classes that the teachers and students have agreed on in advance. Some formative assessments, such as essays and participation in Socratic seminars, also receive dual credit.

Classroom culture. Student participation in the unit is more active than passive. Students are engaged in activities that encourage choice, self-direction, and cooperation with peers and teachers.

MULTIDISCIPLINARY


English
Journey of the hero
Poetry (e.g., Horace, Ovid)
Prose (e.g., Cicero, Livy, Martial)
Cultural context for *Julius Caesar*: culture, values, religion
Classical influences on Shakespeare
New Testament literature (e.g., letters of Paul)
Persuasive essay in letter format
Latin derivatives
Shared Literature
The Aeneid—all or excerpts—(early history)
A Roman comedy (rise of empire/Punic wars)
Julius Caesar (life in the empire)
History
Early history: fact and legend
The empire and Punic wars
Geography
Historical context for *Julius Caesar*: government, politics, role of women
Pax Romana: compare/contrast to contemporary society (essay)
Conflict between Roman culture and Christian beliefs
Focus: Roman Civilization
Fine Arts
Music/musical instruments
Arts: coins, jewelry, mosaics, illuminated manuscripts
Architecture
Drama
Christian art
Mathematics
Estimation (distance related to Aeneas' journey, Punic wars, the empire, roads, aqueducts, etc.)
Roman numerals
Geometry of arch, vault, dome, temple
Trigonometry (functions related to road building, aqueducts, etc.)
Story problems about Roman people (real and fictional), places, and events (e.g., forum, senate, Ostia Antica, the seven hills, Brutus, etc.)
Biology
The human brain
neurology
psychology (prediction and soothsayers)
disorders (epilepsy)

INTERDISCIPLINARY

FOCUS: Surviving in a Changing World **GRADE LEVEL**: 7-8 **TIME FRAME**: Four-six weeks

GOALS FOR STUDENTS

- Solve problems creatively and cooperatively.
- Apply the scientific method and other problem-solving methods to real-world problems.
- Locate, evaluate, and use various strategies—especially technology—to collect data, solve problems, and make informed decisions.
- Communicate new learning to others through quality presentations, performance, and products.
- Identify objective and subjective information.
- Communicate effectively with a variety of audiences.

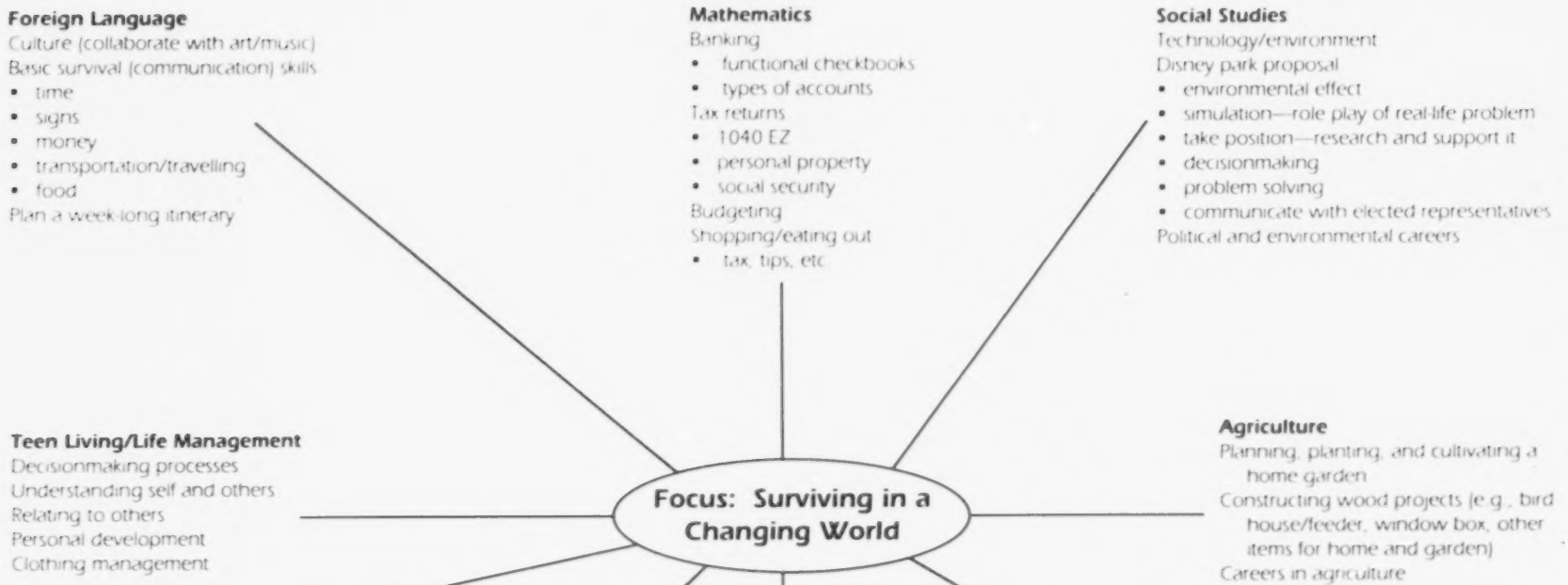
Curriculum. This schoolwide unit develops the generic skills of problem solving, decisionmaking, and communicating through a focused study of the environment, technology, multiculturalism, social/political issues, and job skills across the curriculum. Teachers work in grade-level teams composed of English, social studies, math, and science teachers; or, on the related arts team (art, music, physical education, foreign language, agriculture, teen living/life management). Although the activities are developmentally appropriate for middle school students, high school teams can adapt this unit to meet their students' needs. Individual teachers choose from the student goals and curricular concepts those that are most compatible with their content objectives and interests, and they design activities that promote acquisition of the concepts and goals within and across the various disciplines. Instructional teams review their selected goals and concepts to insure that students have opportunities to achieve all six goals and experiences with each of the concepts.

Instruction. Prior to beginning the unit, students generate activities or questions they would like to pursue related to the identified concepts and skills. This activity serves two purposes: (1) it motivates student interest, and (2) it provides teachers and students with additional activities from which to choose. Also, students complete surveys to identify their career interests, and a Career Day is held during the unit. Parents are an excellent resource for organizing Career Day and arranging for business representatives to be present to provide information on students' stated career interests. Although individual teachers select their own learning activities, instructional teams collaborate on one or more large projects (e.g., environmental issues, career studies). Criteria for all tasks include real-life application, experiential learning, teacher modeling, and addressing multiple intelligences. Instead of relying on textbooks, students use technology and materials gathered from community agencies and businesses.

Assessment. Assessments are both formative and summative. Although teachers design their own assessments, team planning assures alternatives (performances/products as well as paper-and-pencil tests) and variety (teacher, peer, self, and group). At a culminating exhibition, Survival Expo, students display/demonstrate their final projects. Some teachers award dual credit for projects.

Classroom culture. Because teachers and students collaborate on designing the unit activities, most of which are real-life simulations that utilize cooperative strategies, students are more actively involved and self-directed than in a traditional classroom. The original designers of this unit reported fewer discipline problems, better attendance, improved performance, and higher grade-point averages in the six-weeks grading period during which the unit was taught.

INTERDISCIPLINARY



Foreign Language
Culture (collaborate with art/music)
Basic survival (communication) skills
- time
- signs
- money
- transportation/travelling
- food

Plan a week-long itinerary

Mathematics
Banking
- functional checkbooks
- types of accounts

Tax returns
- 1040 EZ
- personal property
- social security

Budgeting
Shopping/eating out
- tax, tips, etc.

Social Studies
Technology/environment
Disney park proposal
- environmental effect
- simulation—role play of real-life problem
- take position—research and support it
- decisionmaking
- problem solving
- communicate with elected representatives

Political and environmental careers

Teen Living/Life Management
Decisionmaking processes
Understanding self and others
Relating to others
Personal development
Clothing management

Agriculture
Planning, planting, and cultivating a home garden
Constructing wood projects (e.g., bird house/feeder, window box, other items for home and garden)
Careers in agriculture

Science
Environment/ecology
- interdependence
- ecosystems
- energy transfer
- relationships

Human and wildlife issues
- industrial growth
- population growth
- types of pollution
- technology
- loss of habitat
- reducing/reusing/recycling
- environmental ethics/laws

Art/Music
Communicating through art
- multicultural differences
- art/music/dance from representative cultures
- different media and instruments
- international mail art
- historic quilt patterns

P.E./Health
Cooperate in a team sport
Choose fitness and good health
- understand and demonstrate first aid and CPR
- understand food groups/good nutrition
- participate in appropriate exercise
- set goals for a healthy lifestyle

Language Arts
Job interviewing
The newspaper
- design and write a newspaper
- write news stories, editorials, and features
- create political cartoons and ads
- work with layout and design techniques
- use computers and desk-top publishing
- work cooperatively in groups
- job skills - each group has an editor, assistant editor, art director, advertising director, and reporters

Adapted from a unit developed by teachers at Peter Muhlenburg Middle School, Woodstock, VA

INTEGRATED

FOCUS: Living in the Future **GRADE LEVEL**: 8-12 **TIME FRAME**: Four-six weeks

GOALS FOR STUDENTS:

- Understand the importance of balance and interrelationships in cultures.
- Apply an understanding of culture to the study of change over time.
- Use art as an expression of culture.
- Expand critical, creative, and reflective thinking skills.
- Collect, analyze, and display data.
- Improve interpersonal communication skills.
- Access and use information effectively.
- Develop global awareness and personal responsibility.

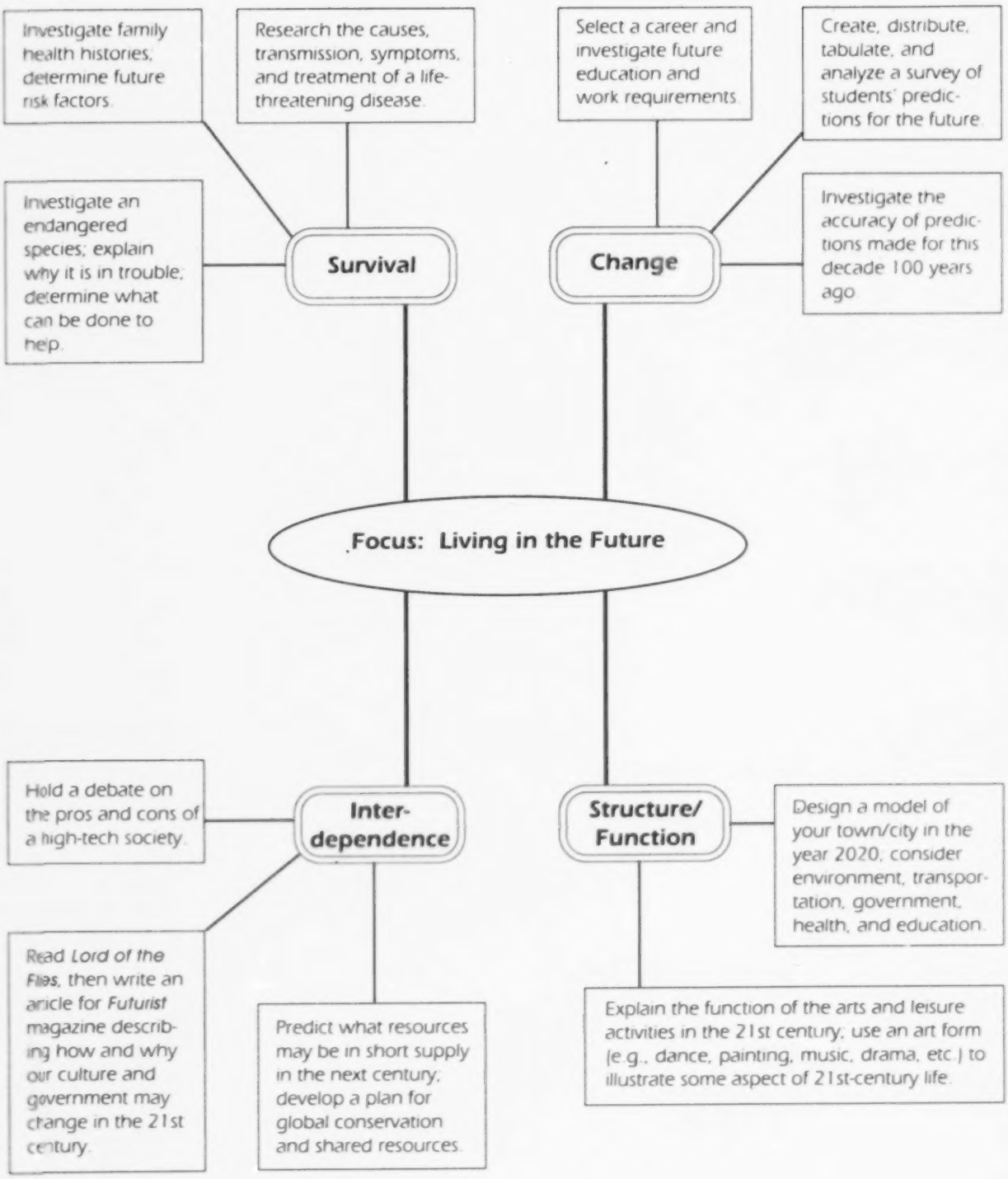
Curriculum. In this unit, the focus and activities emerge from the concerns of students rather than the interests of a teacher or the content of one or more subject areas. Here, curriculum design begins with students listing questions about themselves and their world and then identifying themes that the questions suggest. Students select one theme, such as "Living in the Future," and list activities they might use to answer questions related to it. Next, a team of teachers classify the activities according to the essential knowledge and skills identified in their school or district's curriculum framework. If teachers feel that additional or alternative activities are needed, they include them.

Instruction. Instruction in this unit proceeds from a constructivist view. Since meanings are created by students rather than imposed by adults, students use their knowledge and skill to search for answers to their questions rather than to concentrate on passing tests or preparing for an occupation. This shift in the source of meanings redefines the role of teacher from that of content specialist and meaning director to knowledge generalist and learning facilitator. Students are afforded choices among the activities for each concept, and they consult varied resources in the school and community to explore their own questions.

Assessment. Assessments, both formative and summative, are performance-based and encompass peer, self, and teacher evaluation. A look at the suggested activities reveals that assessment is a natural outgrowth of instruction. For example, when students research a life-threatening disease, they are asked to prepare an information brochure about the disease, similar to those found in doctors' offices and hospitals. Using previously determined criteria for excellence, teachers and students evaluate the brochure. As students create, distribute, tabulate, and analyze a survey, teachers monitor the accuracy of each step in the process. Summative assessment of this activity is based on a chart or graphic display, or a written report of the findings.

Classroom culture. The classroom culture in an integrated program is highly collaborative, with students and teachers sharing curriculum decision-making. Students are actively engaged in exploring focused questions about themselves and their world, which are often personal versions of larger-world concerns shared by their teachers and others. With their teachers' support, through such inquiry they develop the knowledge and abilities to become self-directed, lifelong learners.

INTEGRATED


Investigate family health histories; determine future risk factors.
Research the causes, transmission, symptoms, and treatment of a life-threatening disease.
Select a career and investigate future education and work requirements.
Create, distribute, tabulate, and analyze a survey of students' predictions for the future.
Investigate an endangered species; explain why it is in trouble; determine what can be done to help.
Survival
Change
Investigate the accuracy of predictions made for this decade 100 years ago.
Focus: Living in the Future
Hold a debate on the pros and cons of a high-tech society.
Inter-dependence
Structure/ Function
Design a model of your town/city in the year 2020; consider environment, transportation, government, health, and education.
Read *Lord of the Flies*, then write an article for *Futurist* magazine describing how and why our culture and government may change in the 21st century.
Predict what resources may be in short supply in the next century; develop a plan for global conservation and shared resources.
Explain the function of the arts and leisure activities in the 21st century; use an art form (e.g., dance, painting, music, drama, etc.) to illustrate some aspect of 21st-century life.

TRANSDISCIPLINARY

FOCUS: Student Interests/Concerns **GRADE LEVEL**: Secondary **TIME FRAME**: Six weeks-one year

GOALS FOR STUDENTS

- Identify and solve complex problems.
- Formulate valuable questions and answer them through research.
- Learn to manage information resources.
- Become reflective thinkers and decisionmakers.
- Develop quality products/presentations.
- Improve evaluation skills.
- Acquire skills for lifelong learning.
- Develop skills for productive citizenship.

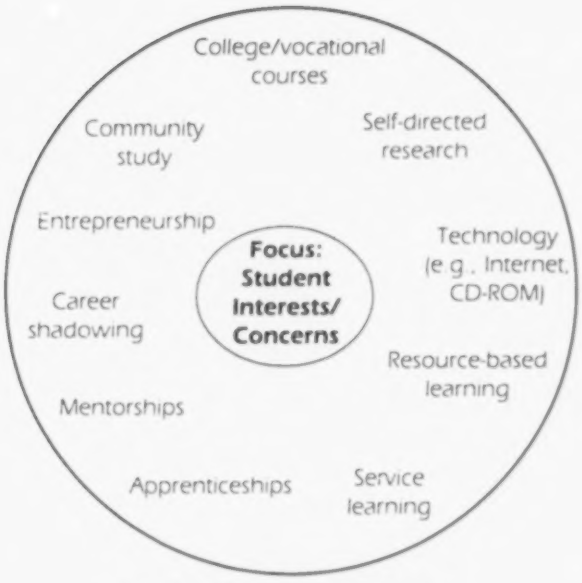
Curriculum. Transdisciplinary curriculum is student-generated. With guidance from teachers and other mentors, students (1) formulate questions about themselves, their world, and their future; (2) identify specific problems and concerns that emerge; (3) select a focus for investigation; (4) identify information resources and learning activities that may help them find answers and solutions; (5) participate in a focused study; and (6) share their findings with others. In some schools, students select particular courses for which they wish to receive credit, as well as the teachers and community agency/business personnel who will serve as their mentors during the independent study. Frequently, the study addresses community problems, personal concerns (e.g., career choices), or global issues.

Instruction. Instruction in a transdisciplinary unit focuses largely on problem solving, communicating, and resource-management strategies. It is designed to guide life experience for students, and it is carried out in a real-world context. Students are challenged to think, act, and reflect through both individual and cooperative activities. Planning, organizing, communicating, being accountable, accepting responsibility, and demonstrating leadership are essential skills embedded in the activities.

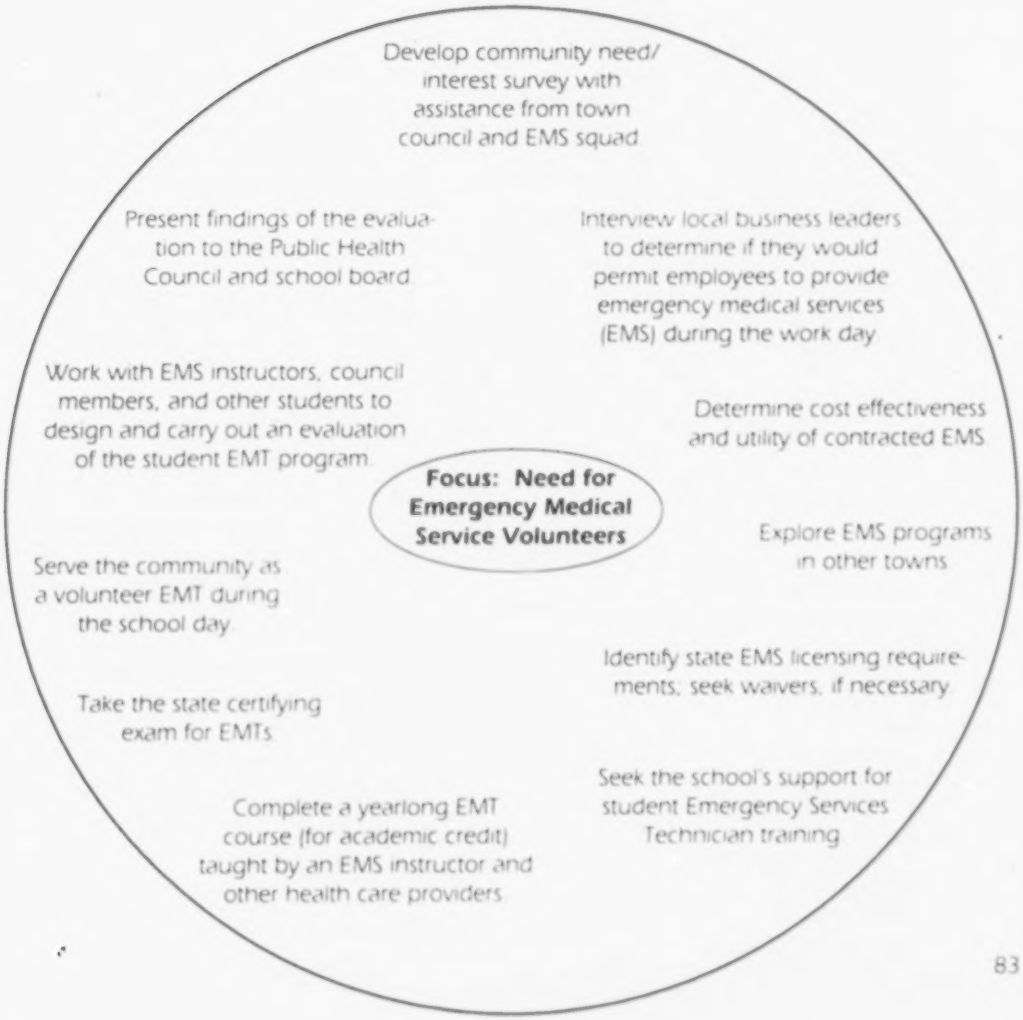
Assessment. Progress toward instructional goals, determined collaboratively by students and teachers, is monitored by peers, mentors, teachers, and students themselves. Portfolios, performances, and presentations are the most frequent forms of summative assessment. Self-evaluation, reflection, and preparation for an exhibition of mastery are built into learning activities.

Classroom culture. The classroom culture is active, collaborative, and student-centered. Students, teachers, and other mentors form a learning community, where they learn with and from each other. Many activities occur beyond school walls, and community members serve as mentors in school and community settings.

Adapted from a program at Nashoba High School, Bolton, MA.



TRANSDISCIPLINARY


Develop community need/ interest survey with assistance from town council and EMS squad
Present findings of the evaluation to the Public Health Council and school board
Interview local business leaders to determine if they would permit employees to provide emergency medical services (EMS) during the work day
Work with EMS instructors, council members, and other students to design and carry out an evaluation of the student EMT program
Determine cost effectiveness and utility of contracted EMS
Focus: Need for Emergency Medical Service Volunteers
Explore EMS programs in other towns
Serve the community as a volunteer EMT during the school day
Identify state EMS licensing requirements, seek waivers, if necessary
Take the state certifying exam for EMTs
Seek the school's support for student Emergency Services Technician training
Complete a yearlong EMT course (for academic credit) taught by an EMS instructor and other health care providers

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FACILITATOR'S GUIDE

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Appalachia Educational Laboratory

DISSOLVING THE BOUNDARIES

FACILITATOR'S GUIDE

Beth D. Sattes
Rebecca Crawford Burns

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Introduction

Dissolving the Boundaries presents information about curriculum integration, different models or stages of integration, and some of the positive benefits of an integrated approach to teaching and learning. It also presents conditions that, when present in a school, enable the successful integration of curriculum.

The authors of this *Facilitator's Guide* strongly believe that curriculum integration can transform a school and can revitalize the learning and thinking in schools--for students and for teachers. However, we also acknowledge that mandates can backfire. We have seen new ideas implemented without a faculty's consent (or at the very least without their full understanding of the implications and consequences). Rarely do uninformed and uncommitted teachers revolutionize the teaching and learning in their classrooms when mandated to change; more likely the results are like a new coat of paint over a crumbling structure. They look good--but only for a short time.

The purpose of this guide is to present group processes that would lead a group--most likely a school faculty or decisionmaking committee within a school or district--through considerations of the material contained in *Dissolving the Boundaries*. Using these processes, the group should be able to make an informed decision about whether or not to implement curriculum integration and about how best to proceed with such an implementation. Included in this Facilitator's Guide are:

- objectives to guide your planning of group meetings and processes;
- an overview of suggested activities, including recommended time structures and agendas for meetings;
- a complete description of each suggested activity to facilitate a group's consideration of curriculum integration, including general tips to the facilitator;
- handouts for participants; and
- copy for overhead transparencies.

We recommend that each participant receive a copy of *Dissolving the Boundaries* prior to the first group meeting.

Objectives

Four major objectives will focus the group's work in better understanding curriculum integration.

1. To explore five different stages of curriculum integration--comparing

and contrasting each to the school's current approach to teaching and learning.

2. To identify **benefits** and **costs** (i.e., problems and challenges) to students, teachers, and the community-at-large of an integrated approach to teaching and learning.

3. To make an individual and collective commitment to curriculum integration.

4. To establish a plan for how the school might best proceed to integrate curriculum.

Suggested Activities—A Brief Overview

To fully explore the implications and consequences of adopting an integrated approach to curriculum and instruction will require at least six hours of meeting time. This could be accomplished in two half-day meetings, or one six-hour meeting. Ideally, 12 hours--over the course of four to six meetings--would be used. This longer time period would enable an in-depth look at the needs of students in the school and an assessment of how well the school currently meets those needs. Sample agendas are provided on pages 5, 6, and 7 of the *Facilitator's Guide*.

Even if some members of the faculty do not intend to integrate, they need to understand in what ways the organization and culture of the school might change when other teachers do integrate. We recommend that an entire school faculty participate in at least the first six hours; the final planning activity might be accomplished by a subgroup of teachers such as a planning committee, a school advisory council, or a subset of teachers who will pioneer the implementation efforts at the school.

Below we have provided a brief description of suggested activities. Those that would be included in the 12-hour version are labeled "Optional." The remaining activities are suggestions for the six-hour agenda. A more complete and detailed description of each activity--including possible handouts and overhead transparencies--is contained in the following sections.

To explore Section I, Understanding Curriculum Integration, of *Dissolving the Boundaries*, use Activities 1 through 4.

1. **Focus on Real Students and Their Needs** (30 minutes)
   Each teacher introduces to the group a student (past or current) who never really reached his or her potential, briefly describing the

problems that student faced and ways in which the school may have let the student down.

2. **The Rationale for Integrating Curriculum and Instruction** (15 minutes)
   Facilitator presents information from the first two parts of Section I in *Dissolving the Boundaries*; alternatively the entire group reads the first two topics in the book, "What is Integrated Curriculum?" and "Why Do We Need to Integrate?"

3. **What Curriculum Integration Looks Like: Five Evolutionary Stages** (90-120 minutes)
   Divide the group into five subgroups, each assigned one of the five stages. Each group will (a) read the text about its assigned stage, (b) study the information contained in the summary chart, (c) compare and contrast the assigned stage to current instructional practice in the school, and (d) reflect on the potential benefits to students. The final task will be to (e) prepare and present an overview of this stage to the entire group. The presentation may be in any style: lecture (with accompanying overheads and other graphics); demonstration (a skit or role-play of an actual classroom that operates in this stage); or other creative methods of teaching this information to the entire group. A critical part of the presentation must include a list of benefits (written and posted after the presentation) for students and for teachers.

4. **Personal Teaching Style Plays a Part: Choosing the Level That Fits** (20 minutes)
   Participants, having heard presentations about the five different stages, reflect privately on the stage which seems to fit them best; i.e., that they would most like to have operating in their classroom ultimately. In a public display of their beliefs, the group stands along the continuum (represented by the five stages posted across the room) in the place that best fits their ultimate goal for curriculum integration.

To fully explore Section II, Assessing Your Readiness For Curriculum Integration, of *Dissolving the Boundaries*, use Activities 5 through 7.

5. **An Investigation and Assessment of Our School: Are We Meeting the Needs of Students?** (Optional Activity to be conducted in two separate meetings, each lasting approximately two hours.)
   It has been said that one of the best indications of excellence in schools is an attitude of dissatisfaction with the status quo. If teachers and administrators think their school is doing a great job and if they aren't actively looking for ways to do their job better, they are not motivated to learn and apply new ideas related to

teaching and learning. This activity, called a "collegial investigation," provides a structure within which faculty members can study how well their school--with its traditional, discipline-based approach to curriculum and instruction--prepares students for life in the 21st century.

6. **A Look at the Facilitative Conditions: Is Our School Ready?** (60 minutes)
   Divide the group again, this time into four subgroups. Each group is assigned to one of the four conditions described in Section II, "Assessing Your Readiness for Curriculum Integration." After individually reading about the assigned condition, the group's task is to brainstorm two lists: (a) a list of the factors in the school that will facilitate the movement to fully integrated curriculum and instruction, and (b) a list of the factors in the school that will restrict or constrain such movement. These two lists, after being posted, will be viewed by all groups as they "gallery walk" around the room to read through the strengths their school and faculty will contribute to ease the change process and the restraining forces to be overcome in their school.

7. **A Look at the Pros and Cons: Where Do I Weigh In?** (20-40 minutes)
   Having posted and reviewed both the benefits—or driving forces—(from Activities 3, 4, and 6) and the restraining forces (Activities 5 and 6), it is time now for participants to make a public showing of whether or not they want to proceed with curriculum integration—as they understand it. Using the "Fist of Five," or some other technique that allows people to quickly ascertain a snapshot of the group's current feelings and attitudes, participants should respond to the statement, "Curriculum integration offers great potential to improve our students' learning; I am willing to support efforts to integrate the curriculum in our school." Group discussion should follow—to clarify objections, questions, and concerns.

To explore Section III, Next Steps: Planning For Curriculum Integration, of *Dissolving the Boundaries,* use Activity 8.

8. **A Plan For the Journey: Now That We Know Where We Are and Where We Want to Be, How Do We Get There?** (90-120 minutes)
   Review the restraining factors and begin to brainstorm ways to minimize each of them. Answer some basic questions: What is our vision for curriculum integration? Who is involved and over what period of time? How will we organize teams? How will we select team members? Who will receive training—and when and where? How will we revise the schedule? Are there schools we can visit (or phone) who could advise us as we begin this journey? Are there additional materials on curriculum integration and teamed instruction that we can read?

Sample Agenda 1
Full–Day Meeting to Consider Curriculum Integration

Distribute copies of *Dissolving the Boundaries* prior to the meeting.

8:00 Focus on Students and Their Needs

8:30 The Rationale for Integrating Curriculum and Instruction

8:45 What Curriculum Integration Looks Like: Five Evolutionary Stages
- Divide into groups
- Read about assigned stage
- Analyze and discuss potential benefits
- Prepare presentation

9:30 Break

9:45 Continue Activity 3
- Five group presentations

10:30 Personal Teaching Style Plays a Part: Choosing the Level That Fits

10:50 A Look at the Facilitative Conditions: Is Our School Ready?
- Divide into groups
- Read about assigned condition
- Brainstorm facilitators and restrictors
- Post and gallery walk

12:00 Lunch

1:00 A Look at the Pros and Cons: Where Do I Weigh In?

1:30 A Plan For the Journey: Now That We Know Where We Are and Where We Want to Be, How Do We Get There?

3:00 Adjourn

Sample Agenda 2
Two Half-Day Meetings to Consider Curriculum Integration

In preparation for the first meeting, distribute copies of *Dissolving the Boundaries* and ask participants to read Section I.

First Meeting

1:00 Focus on Students and Their Needs

1:30 The Rationale for Integrating Curriculum and Instruction

1:45 What Curriculum Integration Looks Like: Five Evolutionary Stages
- Divide into groups
- Read about assigned stage
- Analyze and discuss potential benefits
- Prepare presentation

2:30 Break

2:45 Continue Activity 3
- Five group presentations

3:30 Personal Teaching Style Plays a Part: Choosing the Level That Fits

4:00 Adjourn (Homework assignment: Read about facilitative conditions in Section II of *Dissolving the Boundaries*)

Second Meeting

1:00 A Look at the Facilitative Conditions: Is Our School Ready?
- Divide into groups
- Read about assigned condition
- Brainstorm facilitators and restrictors
- Post and gallery walk

2:00 Break

2:15 A Look at the Pros and Cons: Where Do I Weigh In?

2:30 A Plan For the Journey: Now That We Know Where We are and Where We Want to Be, How Do We Get There?

4:00 Adjourn

Sample Agenda 3
Two Full–Day Meetings to Consider Curriculum Integration

Distribute copies of *Dissolving the Boundaries* prior to the first meeting.

First Meeting

8:00 Focus on Students and Their Needs

8:30 The Rationale for Integrating Curriculum and Instruction

8:45 What Curriculum Integration Looks Like: Five Evolutionary Stages
- Divide into groups
- Read about assigned stage
- Analyze and discuss potential benefits

9:30 Break

9:45 Continue Activity 3
- Prepare presentation
- Five group presentations

11:00 Personal Teaching Style Plays a Part: Choosing the Level That Fits

11:30 Lunch

1:00 An Investigation and Assessment of Our School
- Introductory discussion of postulate

2:00 Introduction of the Investigative groups
- Divide into groups and plan data collection

3:00 Adjourn (Homework assignment: Collect and analyze data)
- Set date for second meeting to be held at least a week later.

Second Meeting

8:00 Continue the Investigation and Assessment
- Meet in small groups to share and analyze data
- Reach preliminary conclusions from the data

9:30 Break

9:45 In fishbowl or large group, conduct final discussion

10:30 Reflection on Beliefs
Discussion of Implications

12:00 Lunch

1:00 A Look at the Facilitative Conditions: Is Our School Ready?
- Divide into groups
- Read about assigned condition
- Brainstorm facilitators and restrictors
- Post and gallery walk

2:30 Break

2:45 A Look at the Pros and Cons: Where Do I Weigh In?

3:00 A Plan For the Journey: Now That We Know Where We Are and Where We Want to Be, How Do We Get There?

4:00 Adjourn

Group Activities

Activity 1
Focus on Real Students and Their Needs

Time:

30 minutes, depending upon group size (allow at least 30-90 seconds per participant)

Purpose:

To establish the tone and purpose of the meeting: to seriously consider what is best for students. This activity brings the focus onto real students, allows teachers to share personal stories from their teaching history, and brings a group together as a result of the depth of sharing. The stories will be mixed with humor and grief if the assignment is taken seriously.

Materials:

None required.

Optional: Overhead 1-A with the directions.

Optional: Two colored blocks for each teacher. The experience is enriched if teachers use physical objects to represent (a) the student and (b) the needs that were not met by traditional teaching methods. If the blocks are used, have the teachers add their blocks as they introduce each student, collectively building a structure that represents students and their real-life problems. This structure can remain in place throughout the meeting, serving as a visual (but symbolic) representation of the students' needs as perceived by the group.

Directions:

The facilitator should begin by establishing the objectives and purpose of the meeting. Introduce this activity by acknowledging that in our traditional ways of teaching, some students are left behind; many fail to truly engage in learning. We tend to get caught up, as teachers, in needing to "teach the subject"; we can easily forget that we are really here to "teach the students" and to help them learn.

Ask each teacher to think of a student (past or present) who never really reached his or her potential. This may be a student who had great ability but was not "turned on" to school; it may be a student with limited ability who, regardless of how hard he tried, failed, nearly failed, or at any rate progressed through school feeling like a failure; it may be a student who faced so many personal problems that school seemed trivial by comparison.

Ask each teacher to introduce us to that student using a pseudonym, briefly describing (a) the problems that student faced, (b) ways in which the school let that student down or was inadequate to meet that student's needs, and (c) the kind of school environment in which that student might have thrived. (Overhead 1-A)

Notes:

As teachers report out the problems, contributions of the school, and factors in the school that would promote success and student learning, the facilitator should make notes because these will be referred to throughout Activity 2.

Alternatives:

With a large group (faculty of more than 25 or 30), teachers can share their stories in small groups. Each group can choose one or two to share with the larger group.

Activity 2
Rationale for Integrating Curriculum and Instruction

Time:

15-30 minutes, depending upon how much discussion results

Purpose:

To familiarize participants with the concept of integrated curriculum and to begin to build a case for the importance of integrating.

Materials:

Overhead transparencies for Activity 2.
Copies of *Dissolving the Boundaries* for each participant.

Description:

Facilitator presents information from the first two parts of Section I in *Dissolving the Boundaries*, pp. 3-5. *(Throughout the presentation, refer to the problems cited by participants in Activity 1 as well as possible solutions that a school could offer.)* Might use a script that makes three or four major points, such as the following:

I. Research on how people learn indicates that the brain searches for patterns and interconnections to construct meaning. (Overhead 2-A) Here is an example. Listen to this passage and see what your mind makes of it.

> Sally first let loose a team of gophers, but the plan backfired when the dog chased them away. She then threw a party, but the guests failed to bring their motorcycles. Furthermore, her stereo system was not loud enough. Sally spent the next day looking for a peeping tom but was unable to find one in the yellow pages. Obscene phone calls gave her some hope until the number was changed. It was the installation of blinking neon lights across the street that finally did the trick. Sally framed the ad from the classified section and now has it hanging on her wall. (Overhead 2-B) *This example is from a presentation by Jane Stallings, Nashville, TN, 1984.*

Did your mind do a lot of searching--trying to make sense and find connections with that passage? It's really weird because it doesn't seem to make sense. It seems to be a series of disconnected sentences. But if I tell you the context, it will make some sense. Sally has a terrible neighbor, and she's trying to think of some way to get this neighbor to move. Now listen as I read it again. See what your mind adds, once you have something to connect to.

Here is another example. See what sense your mind makes of this passage:

> "In 1367 Marain and the settlements ended a seven-year war with the Langurians and Pitoks. As a result of this war Languria was driven out of East Bacol. Marain would now rule Laman and other lands that had belonged to Languria. This brought peace to the Bacolian settlements...." (Overhead 2-C). *This example is from the Fall 1993 issue of* ***Learning****, a newsletter from the National Research Center on Student Learning, Pittsburgh, PA.*

If you had trouble making sense of this passage, you can begin to understand how a student feels who doesn't have prior knowledge and so can't connect the pieces together. It frustrates the mind; retention is nearly impossible; engagement and interest wane quickly with information that isn't connected. How would you do if I gave you a test on this information? (*Pause for comments from participants.*) This text was developed by taking an actual passage from a social studies book and replacing the agents and locations with pseudonyms:

> "In 1763 Britain and the colonies ended a seven-year war with the French and Indians. As a result of this war France was driven out of North America. Britain would now rule Canada and other lands that had belonged to France. This brought peace to the American colonies...."

It helps to be able to make connections, doesn't it?

II. One way to make connections between and among facts is to integrate curriculum. The definition of *integrate* in Webster's is as follows:

> "to form, coordinate, or blend into a functioning or unified whole; to unite." (Overhead 2-D)

Integrated curriculum is a holistic approach to learning that stresses connections and relationships rather than delineations within and across the disciplines. It builds bridges rather than boundaries between specific bodies of knowledge.

Traditional, discipline-based curriculum is focused on content objectives; integrated curriculum is based on concepts and focuses on student performance. (Overhead 2-E)

III. In schools, learning is segmented. You learn science one period, math another, English another, and you have separate times to study history, geography, foreign language, art, physical education, etc. But real life is not segmented; it is not divided into subjects. (Overhead 2-F)

In schools with integrated curricula, student learning is increased because students are more motivated to learn; they become more active

participants in their own learning. Connections are made and more in-depth learning occurs; learning relates to real life--it is not artificial.

Numerous benefits were cited by teachers and administrators from four Virginia secondary schools who had used interdisciplinary teamed instruction for one year. (Overhead 2-G) Among the benefits to students were: (1) greater enthusiasm for learning, (2) increased participation in and completion of learning activities and assignments, (3) better grasp of concepts and skills, (4) making connections across disciplines, (5) fewer discipline problems, and (6) improved attendance. *(Use examples from Activity 1, if appropriate here.)*

Teachers benefit also in the following ways: (1) gain a sense of belonging and support when they work with a group of peers on a daily basis; (2) contribute their expertise to a team effort and are not overwhelmed by the need to be an expert in all areas of the curriculum; (3) increased feelings of efficacy, empowerment, and enthusiasm for teaching; (4) learning from colleagues; (5) increased creativity; and (6) professional renewal. (Overhead 2-H)

Ask teachers to turn to page 5 in *Dissolving the Boundaries* and look at paragraphs two and three, in which the benefits to students and teachers are cited. (Overhead 2-I) Ask each person to select: (a) the student outcome they would most value in their classroom, and (b) the teacher outcome they would most value for themselves personally. Then ask them to hypothesize why curriculum integration would result in such benefits. *(Ask them to share their responses in small groups, selecting a recorder and reporter who will share with the larger group. After allowing time for small group sharing and discussion, ask each group reporter to share. Encourage the discussion to develop between participants, as opposed to being "turn-talking" in which first one group reports followed by the next.)*

Notes:

IN DISCUSSION: When a question is posed to the group, allow sufficient time for thinking before calling on someone to respond. This three- to five-second period of silence (called wait time or think time) enables everyone in the room to formulate a response to the question before hearing an oral response. A second period of silence--after the response is given--will allow other participants to react (either mentally or verbally) to the comment. This allows participants to talk to one another, rather than primarily to the facilitator, and helps engage the thinking processes.

Alternative:

Ask participants to read the first two parts in Section I ("What is Integrated Curriculum?" and "Why do We Need to Integrate?") of *Dissolving the Boundaries* before coming to the meeting--or immediately

after Activity 1. Lead a discussion of the subject, posing questions and asking for questions from the participants.

Alternative:

Use an activity such as "Round-Robin Questionir.g," a technique described by J. T. Dillon in the Phi Delta Kappa Fastback, *Teaching and the Art of Questioning*. Ask each participating teacher to write down five questions, based on the reading of the assigned parts of the book. Encourage teachers to ask divergent questions, those that have more than one correct answer. At least one of the questions should be a question for which the teacher does not have an answer--one which is truly perplexing or puzzling and about which he or she would like to hear others' thinking. Ask for a volunteer to stand and pose one of her questions, and to call on another participant for a response. Then, that respondent in turn stands to pose one of his questions, calling on yet a third teacher. It the question is divergent (or if the answer is not known), a teacher may call on two or three to respond; discussion is the hoped-for outcome of this interchange. This continues until the facilitator feels that the content has been thoroughly reviewed and is well understood.

Activity 3
What Curriculum Integration Looks Like: Five Evolutionary Stages

Time:
90-120 minutes

Purpose:
To more fully understand the range of possibilities and options for curriculum integration by learning about the five stages in Burns' hierarchy; to compare each stage to the school's current methods of curriculum, instruction, and assessment; and to investigate the benefits of each stage relative to current practice within the school.

Materials:
Dissolving the Boundaries for each participant
Easel pad, markers, and masking tape for five groups
Poster board for presentations; blank transparencies and pens
Handouts for each of five small groups

Description:
Share the purpose of this next activity by explaining that there is no one right way to integrate curriculum and that in this activity, we are going to learn about five different stages of curriculum integration. Integrating curriculum--like any change effort--is a developmental process. Change is evolutionary; progress occurs in small steps. Teachers need to begin where they are and move through the stages, as they feel comfortable.

Divide into five subgroups, and assign each group to one of the five stages described in *Dissolving the Boundaries*, pp. 6-18, as follows:

1. Parallel Disciplines,
2. Multidisciplinary,
3. Interdisciplinary,
4. Integrated, and
5. Transdisciplinary.

In a cooperative learning activity, in which each group will learn about one stage and then teach it to the rest of the participants, use the participant handouts to give the directions.

- Individually read the text about your assigned stage.
- Using the reading you have done and information in the chart on page 8, develop a working definition or description of your assigned stage.

- Compare and contrast the assigned stage to current instructional practice in the school; complete the Venn Diagram on the handout.
- Reflect on the potential benefits to students of curriculum and instruction as it would appear in this stage of integration. Record the benefits on an easel chart.
- Prepare a presentation to the entire group that will give an overview of this stage. The presentation may be in any style: lecture (with accompanying overheads and other graphics); demonstration (a skit or role-play of an actual classroom that operates in this stage); or other creative methods of teaching this information to the entire group. A critical part of the presentation must include a list of benefits (written and posted after the presentation.)

  Allow at least five minutes for each group's presentation. Include some time for questions from the rest of the group. You may want to hold a brief discussion after all the presentations are completed.

Notes:

Much of this activity involves independent working of small groups. The facilitator should move around to all the groups, making sure the instructions are understood and that the group is on task. The presence of the facilitator (and some well conceived questions) will help an off-task group to become engaged with the task. A facilitator will not have all the answers; it's perfectly okay to say, "I don't know." Part of a facilitator's job is to help participants find answers. Another part of the job is to help participants surface questions they have. But perhaps most importantly, facilitators need to establish a climate in which it is safe to ask questions that need to be asked in exploring a topic as complex as curriculum integration and its implications for students and teachers.

For ease in grouping participants into the five groups somewhat randomly, copy each group's handout on a different colored paper. As participants come in the room, randomly hand them one of the colored handouts. When it is time to form groups, ask them to get together with others in the room who have the same colored paper, e.g., "All those with a blue handout form a group at this table."

Alternative:

Ask everyone to read Section I in its entirety before the meeting and to come prepared to ask and answer questions. If possible, before the meeting, the facilitator could identify five willing teachers, each of whom agrees to read about one of the stages and present information to the large group. Ideally, these five teachers would be individuals who have themselves done some experimenting with curriculum integration and could speak from experience.

Activity 4
Personal Teaching Style Plays a Part: Choosing the Level That Fits

Time:

15-20 minutes

Purpose:

This activity encourages participants to (a) reflect on the five stages or levels of interdisciplinary curriculum and instruction, (b) think about which level best meets their own personal teaching styles and interests, and (c) identify others in the school with similar interests in relation to curriculum integration. It also provides the facilitator with a "reading" of the group's interest in and commitment to curriculum integration.

Materials:

Signs on the wall with the names of each of the five levels of curriculum integration.

Overhead 4-A

Directions:

Use Overhead 4-A to illustrate the five stages of curriculum integration. Point out that as teachers move across the continuum, their curriculum focus shifts from **content** to **concepts**.

Ask all participants, having heard presentations in Activity 3 about the five different levels, to reflect privately on the level that seems to fit them best, i.e., the kind of teaching and learning they would ultimately like to have in their own classrooms.

After several minutes of quiet reflection, ask each individual to take a position by standing along the continuum (represented by the five stages posted across the room) in the place that best fits his/her ultimate goal for curriculum integration.

Ask each to share (with at least one other person) the reasons for choosing that level of integration.

Notes:

Because personal commitment is important if change is to be meaningful, this is an essential step. Encourage people to challenge themselves. If they are on the line (between two levels), encourage them to move upward.

Alternative:

Explain to the group that writing helps to clarify thinking. Although

we rarely write reflectively, the next activity will allow time for written reflection. Ask participants to think about the presentations in Activity 3 and to think about their own classrooms. (You may want to pose the following questions on an overhead transparency.)

- What have I learned?
- How do these various stages of integration relate to goals for my class?
- How would students benefit?
- Would any of these stages or levels promote (or hinder) learning?

Explain that writing and thinking require quiet. Even if they finish writing, participants should remain quiet until time is called. Set a kitchen timer for 10 minutes. If people are still writing when time is nearly up, allow 5 more minutes. It is important that the facilitator model the behavior that is desired here and write reflectively while participants are thinking and writing.

When people have finished the quiet reflection, ask if anyone would like to share an insight. (Be sure to allow sufficient wait–time here; it may take 10 seconds for someone to volunteer. Once one person volunteers, others will follow.) If no one chooses to share, that is okay.

> Allow an opportunity for participants to share any learnings from their experience of reflecting and writing. This is a rare opportunity and it is important to allow people time to process the experience so that they can learn from it.

Activity 5
An Investigation and Assessment of Our School: Are We Meeting the Needs of Students?

Time:

This optional activity requires two separate meetings, each lasting approximately two hours. Participants will work on group assignments between meetings.

Purpose:

It has been said that one of the best indicators of excellence in schools is an attitude of **dissatisfaction with the status quo**. If teachers and administrators think their school is doing a great job and if they aren't actively looking for ways to do their job better, they are not motivated to learn and apply new ideas related to teaching and learning. This activity, called a collegial investigation, provides a structure within which faculty members can study how well their school--with its traditional, discipline-based approach to curriculum and instruction--prepares students for life in the 21st century.

Materials:

Overhead of the Elements of Reasoning (5-A)
Easel stands, paper, markers, and masking tape
Participant handouts (for five investigatory teams)
Banner (or overhead) of the statement for investigation

Directions:

These directions are written in the manner of a script for the facilitator. An actual discussion cannot be scripted, of course, because the facilitator will need to be prepared to move in the directions established by the participants. A script will be beneficial in preparing, but not for use in the middle of such a meeting.

Use the following script only as a guide.

MEETING #1, Activity 5

At our last meeting, we learned about curriculum integration, different models or stages of integration, and some of the positive benefits of an integrated approach to teaching and learning. We learned, too, that integration is not a simple matter. True integration involves more than a new coat of paint; it involves some fundamental changes in the structures of schooling. It would change:

- what we teach,

- how we teach,
- where we teach, and
- with whom we teach.

And you don't get much more basic than that!

We want to make an informed decision about whether or not curriculum integration is for us. We have seen fads come and go; we do not want to undertake a new program that is here today and gone tomorrow. We want our efforts to count toward something; and we believe that unless teachers--or some of us, anyway--make a commitment to curriculum integration, then we shouldn't adopt it. And we believe the commitment should be made with eyes wide open about the costs--not just the benefits. If this school proceeds down the path of curriculum integration, we want to do it because we believe curriculum integration will make an important, positive difference for our students. We definitely *don't* want to adopt curriculum integration just because some expert thinks it is good; or because a board member heard about it and thought our school should give it a try.

At the same time, we don't want to reject it out of hand. If we believe that what we are now doing in our school is *not* working for all of our students, then we need to have the courage to try something new. And curriculum integration offers that potential.

Our decision should be thoughtful; one in which we weigh pros and cons, collecting evidence as to the effectiveness of our school program as it currently exists (both the good and the bad!) and the potential and pitfalls of integration. We are proposing to explore together, over the course of the next three weeks, how well our school is meeting the needs of all our students. We want to determine if we agree or disagree with the following statement:

> Our traditional, discipline-based approach to curriculum and instruction does not adequately prepare our students for life in the 21st century.

If we affirm this statement, that is, if we believe that all of our students are not well served by our current methods of teaching, then we want to proceed to answer the next question: Does curriculum integration have the potential to improve teaching and learning in our school in significant ways?

As we study this issue, we plan to use a ***process for group decision-making*** called Collegial Investigations. In our discussions, we want to talk--openly and honestly--about how well the school is serving our students.

Preliminary Assessment of Beliefs

What do we believe about this statement--individually and collectively--and why?

Before we begin a discussion of our beliefs and opinions about this statement, let me ask you to reflect privately. Think about how you would honestly rate our school's preparation of students--all students. Do you agree or disagree with this statement? Now jot down the reasons why you made that judgment.

> Allow three minutes for quiet reflection.

Imagine a line across this side of the room ranging from "Strongly Agree" through "Neither Agree nor Disagree" to "Strongly Disagree" and choose a place to stand along this continuum.

> It would be helpful to have posted these terms along one side of the room so that participants have visual cues as to where to stand. Be sure to allow time for participants to see where the majority of people stand: a visual representation of feelings of satisfaction with the status quo.

Why did you respond as you did? Talk to one other participant about why each of you rated the school as you did.

> Allow adequate time for people to talk to one another in pairs. At a later time in the discussion, we will ask them to share their reasons with the larger group. You might ask at this point for people to share any insights they had as they saw how colleagues "rated" their school.

Preliminary Discussion and Introduction of the Elements of Reasoning

As we conduct our investigation of this question, we will rely on elements of reasoning articulated by Richard Paul, a professor of critical thinking at Sonoma State University. These elements are at the heart of the process of Collegial Investigations, as developed at the Appalachia Educational Laboratory.

> **Note to the facilitator:** During the ensuing discussion, your purpose is to evoke thoughtful dialogue on the topic. We suggest you use the elements of reasoning as a tool for the discussion. (Overhead 5-A) The elements are presented below in sequence but rarely do they appear sequentially in a real discussion. Facilitators should carefully review the elements before the discussion and be ready to move from one to another as the discussion proceeds. It is important, during this preliminary discussion, to help participants consider the first six elements; suggestions to that end are noted below. The last two elements--consequences and conclusions--will

be more heavily used in the discussion **after** evidence has been collected.

It would be helpful to make a large graphic of these eight elements or to use the overhead during discussion, providing visual cues to the names of each. As each participant speaks, point to the appropriate element for clarification. For example, if you need to clarify a term for the group, you can point to the element, "concepts" as you ask for a definition; if people speak strictly from a teacher's point of view and you think it would be helpful for the group to consider a student's perspective, point to the element, "point of view," etc.

1. The first element is **purpose**. Paul says it is important to identify the purpose of our discussion: Why are we having this discussion?

   Allow time for some responses. If none are forthcoming, suggest a purpose to the group: to make a determination of whether or not curriculum integration will improve the teaching and learning processes at our school.

2. We frequently get engaged in discussions without clearly identifying the **questions at issue**. Paul recommends that we be explicit in identifying what the questions are. What specific questions are we trying to answer as we discuss the statement before us, "Our traditional, discipline-based approach to curriculum and instruction does not adequately prepare our students for life in the 21st century."

   Allow time for participants to think. Ask them to write down the questions that they have; have index cards available for writing individual questions. Allow time for sharing questions in small groups before opening it up for large group discussion. Some of the following kinds of questions may be posed.

   - With our current school structures, how well are our students learning? Do we need to change something--or are we satisfied with the way things are?
   - How many of our students are truly engaged in their learning? Are our current teaching strategies effective? Are some of our students "doomed to fail" because of our current approach?
   - Are students learning the things that will be required of them in the world beyond our school?
   - Are we teaching what is important? Do we know what is important to teach? Are we willing to work to figure out what is important for our students to learn?

   The questions at issue do not have to be fully exhausted at this time. Throughout the discussion, participants may continue to shed light on the identifying question or questions that they

really want to try to answer in this investigation. The facilitator should record the questions at issue--on a separate easel pad--as they emerge.

3. In order to have a meaningful discussion, we must consciously and clearly define our **concepts**. Language--the words and phrases that we use to communicate--strongly influences our thinking about any given issue. Sometimes when people find themselves in disagreement, it is because they haven't stopped to clarify concepts and ideas; they are talking about the same thing but they have different working definitions. In our discussion today, I have heard some of the following terms used. Can we agree on their meanings?

   What do we mean by "traditional, discipline-based approach"?

   What do we mean by "adequately"?

   What is included in the terms "curriculum and instruction"? Can we agree on that?

   Writing the concepts on a blackboard or easel chart will help to focus attention on a given concept. Throughout the entire discussion (not just this segment), be alert for key ideas and words that may not have a common meaning among group members. Write these words down under the heading "Concepts" and see if the group can agree on a working definition.

4. **Point of view** refers to where we are coming from as we engage in reasoning about a particular problem or question. Paul maintains that our point of view, or frame of reference, regarding a particular question is usually biased or colored to some extent by who we are, what we value, what we do, what experiences we've had, and so forth. It is essential that we not only be aware of our own point of view but also recognize how this frame of thinking influences our thinking. It is helpful, in keeping an open mind, to try to adopt the points of view of others.

   Clearly, we have been speaking from the point of view of *teachers* in our school. What other points of view need to be considered?

   Allow time for participants to think. If people have spoken from the perspective of other role groups, mention them to the group now. As they volunteer other points of view, ask them to project what light that perspective sheds on these questions at issue. Challenge them to consider, at a minimum, the following points of view:

   - **Students**. How would our students rate our school? Would students think that they are adequately prepared by the courses offered here? Are they interested and engaged in what is taught? Are they learning? Are they learning what is important? Do they believe that what is taught is important? Can they see connections to the real world?

- **Low-achieving students**. What about the special population of students in our school who are poor performers? How would they rate our school in terms of preparing them for "life after school"? What are these students' needs? What are we doing to help meet these needs? What do we do that ignores their needs?
- **Parents**. Do parents of our students believe that student needs are met? Would parents be open to "non-traditional" ways of teaching and learning? What do parents believe is important for their students to be learning in preparation for the world of work--or the world of higher education?
- **Business community**. Are most members of the business community satisfied with what our graduates know and can do? Are our students recognized as having mastered basic and essential skills? Does the business community consider our students to be good thinkers?
- **Others?**

5. **Assumptions** are the beginning points in our reasoning. Clarifying our assumptions helps us understand what things we take for granted. It is important that we always be able to state clearly the assumptions that we are making about a given issue prior to the beginning of our formal thinking about it. Having stated the assumptions aloud, we can then determine if they are clear, correct, justifiable, necessary, and consistent. What are our assumptions about the issue under consideration?

   Allow time for participants to reflect. Remember that once the idea of assumptions has been introduced to the group, your job as facilitator is to help people identify the assumptions behind some of their assertions. Anytime participants make statements, look for unspoken assumptions and help them to identify them. Some examples follow:

   - Do we believe that all students can learn? That all students in our school can become better prepared for life in the 21st century?
   - Is it the responsibility of schools to meet all students' learning needs?
   - Do we believe that what we do (by way of teaching) is important? Does it make a difference to students?
   - Are we satisfied with the status quo? If we don't think we are doing the job of "**adequately** meeting the needs of **all** students" does that mean we haven't been doing a good job? Do we need to defend "what we've got"?
   - Does our school really need to change as we approach the year 2000? Will the skills and habits of students from 1950 be adequate for thriving in the next century?

6. We reach conclusions about any given idea based on **evidence**. Evidence is the information, data, and experiences that we use in our reasoning that helps us reach a conclusion. What evidence do we have as we reach conclusions about the statement before us? We all expressed opinions at the beginning of this investigation as we formed a peoplegraph across the room. What evidence did we have for these opinions and beliefs?

   Ask participants to share why they made their initial ratings about the school with the large group. As they report out, look for concrete evidence and make a listing of the evidence people used in making a judgment.

   Then ask them what evidence is available, that they don't currently have access to, that would help them make a more informed decision about whether or not the school is currently meeting the needs of **all** students. Make a listing of the desired evidence on an easel pad or blackboard in plain sight of the discussants. There are no right or wrong answers here. You can anticipate that group members will suggest some of the following sources as evidence, but these are in no way intended to be exhaustive:

   - graduation rate;
   - attendance rate;
   - grade point average of students;
   - standardized test scores;
   - poll of graduates—rate of success in college, rate of success in finding and holding a job;
   - parental satisfaction surveys;
   - course offerings;
   - student satisfaction surveys;
   - teacher lesson plans (to help identify "current ways of teaching");
   - homework completion;
   - classroom observations (to help identify "current ways of teaching");
   - numbers of discipline referrals; and
   - information about how curriculum offerings are selected.

7. What are the **consequences and implications** if this statement is true? What are the implications if the statement is not true? Implications (or consequences) are the "so what?" or logical outcomes of the conclusions we reach. They are what follow from our interpretation of the particular issue or problem at hand. We can think of a consequence as something that will logically flow from the conclusion we reach. For example, if we believe this statement is true--**our traditional, discipline-based approach to curriculum and instruction does not adequately prepare our students for life in the 21st century**--then one implication is that we will **change** something about our current way of teaching.

8. **Conclusions** are reached by interpreting the evidence on hand related to the questions at issue. Before we started this discussion, we asked group members to share their opinions on this statement. Those initial opinions may or may not have been based on convincing or solid evidence. We are suggesting that in a reasoned discussion--one in which we question our assumptions and clarify the questions and concepts--we may turn up evidence that supports or refutes our initial opinions. Our task now, as a group, is to identify sources of data (or evidence) that will help us reach a more informed conclusion than our initial beliefs.

Selecting Investigatory Roles

In just a few minutes, each of you will join a team for the purpose of collecting data over the next week about the issue under study: Under our current approach to curriculum and instruction, are all of our students learning what is important for them to learn as we enter the 21st century? We will organize into five teams, each of whom will use distinctly different sources of data. Let me first describe the five teams, and then ask each of you to select the one that you would most like to join. (Use Overhead 5-B)

1. The **philosophers**' job is to review expert opinion. Their primary tasks are to critically read selected articles or excerpts from books, to thoughtfully analyze those readings, to discuss the expert ideas with other team members, and to draw some conclusions based upon their readings. We have some suggested readings; however, they are in no way meant to limit your reading. We suggest you browse through the suggested readings, choose what looks appropriate, look in other professional journals, and talk to colleagues for suggestions.

2. The **analysts**' focus is upon historical or archival records--existing data sources that need additional analysis or interpretation. The responsibility of the analysts is to identify existing information and data sources that may shed light on the issue under study and to analyze these in a manner that will allow them to draw meaning and inferences. There is no limit to the data from which they can select--ranging from attendance records to minutes of PTA meetings. The real challenge will be in delimiting the sources of data to use.

3. The **surveyors** will, as their name implies, gather data through surveys. They will formulate appropriate questions; pose them to selected audiences via surveys or interviews; and tabulate, analyze, and interpret the data collected. The surveyors may choose to collect *perceptual* data, (that is, what people believe about whether or

not all students are learning what is important to learn.) Or they may choose to collect data about *actual behaviors* (for example, job performance after graduation.) Their job is to try to answer the following questions: Who is important to survey on this topic? What are the perceptions, attitudes, and opinions of these people (teachers, students, parents, board members, community businesses, and others)?

4. The **people watchers** are the active observers. Their mission is to identify the individuals and groups whose behavior might speak loudly regarding the questions at issue. Primary among these should be students. But they may also decide to focus attention upon teachers, parents, graduates, and/or community members. Most often, people watchers will conduct shadow studies; that is, they will observe their subjects in action.

5. The **storytellers** use the wisdom of practice to inform our study. They reflect on their own experiences and craft stories that will shed some light. They may also choose to solicit stories from other teachers and from students, graduates, and local business people who have hired graduates from our school. They are looking for stories that describe a poignant moment or a critical incident, focus upon an achievement or disappointment, distill an ageless principle or truth, or focus upon a simple technique or renewed understanding.

> Ask participants to think about the kind of investigatory team they would most like to join. Ask all participants to write down their top two choices on an index card. (It might be helpful to have the five team names posted around the room so that the names are easily seen.) After a sufficient time--when everyone has selected two teams they feel comfortable with--ask them to go to a table that is so designated. If the teams are disproportionately selected, ask for volunteers to go to their second choice. It is not important that all teams have equal numbers; however, it is important that no group be too large or too small.
>
> After people have organized into teams, give each team the one-page description of the team's role and responsibilities along with ideas for investigations.

Your final task before we are dismissed today is to read through the description of your team and decide what evidence your team members want to collect and how. We will ask each team for a brief report before we adjourn.

> This planning will require at least 20 minutes. Move around to all five teams to be sure they understand the assignment and can think of data that would help them address one or more questions at issue.

MEETING #2, Activity 5

Analysis of the Data

All five teams should have collected data by this meeting. During this meeting, they need to talk in their team groups, analyze the data they have collected, and come to some shared understanding of what these data mean. Allow about one hour for this analysis. It might help to review the "elements of reasoning" so that the groups can monitor their own use of the elements as they proceed. The facilitator should move around between all five groups to see if they need assistance.

Final Discussion: Conclusions and Implications

We have been studying in our separate teams and it is time now to share our teams' findings with the large group. Each team should choose one representative to come into the fishbowl to continue the discussion we began at our last meeting.

In preparation for this meeting, the facilitator should have arranged six chairs in the center of the room. The use of this fishbowl technique is optional. Ground rules for the fishbowl are as follows: Outside participants are observers. Their role is to listen attentively to the discussion, which should be guided by the elements of reasoning. To participate on a limited basis, observers may stand behind their own group's representative; this lets the group know that another voice wants to be heard. To join the group on a more permanent basis, the observer should take a seat in the extra seat. Soon after a new participant enters the fishbowl, the representative from the team that now has two members should join the large group of observers. In this way, one seat always remains empty.

The facilitator may prefer to proceed instead with a large group discussion. Benefits of the fishbowl are that the discussion will be more focused with a smaller group. Another alternative is to hear reports from each of the five teams, but that can get tiresome and boring to hear one speaker after another. The fishbowl's interactive approach seems to accomplish the same thing--hearing from each group--but in a more interesting manner.

The facilitator may need to get the discussion started by reviewing the **purpose** of the discussion and revisiting some of the questions at issue. Alternatively, the facilitator can pose a question such as, "What have you learned that might shed some light on whether or not our discipline-based approach to curriculum and instruction does, in fact, limit some students' learning?" Wait for a volunteer to begin the discussion.

Conclusions: Final Assessment of Beliefs

After this intensive discussion and study, have our beliefs changed--and why?

I would like for you again to reflect privately on our statement:

> Our traditional, discipline-based approach to curriculum and instruction does not adequately prepare our students for life in the 21st century.

Think about how you would honestly rate our school. Do you agree or disagree with this statement? Now jot down the reasons why you made that judgment.

> *Allow three minutes for quiet reflection.*

Again, I want you to imagine a line across this side of the room ranging from "Strongly Agree" through "Neither Agree nor Disagree" to "Strongly Disagree" and choose a place to stand along this continuum.

> It would be helpful to have posted these terms along one side of the room so that participants have visual cues as to where to stand. Be sure to allow time for participants to see where the majority of people stand: a visual representation of feelings of satisfaction with the status quo.

Why did you respond as you did? Talk to one other participant about why each of you rated the school as you did.

> Allow adequate time for people to talk to one another in pairs. You might ask at this point for people to share any insights they had as they saw how colleagues rated their school. You might also ask for volunteers to share with the group: those whose ratings had substantially changed; those whose ratings had stayed the same; those who learned some new things about the students in their school, etc.
>
> Assuming a general trend in the ratings toward dissatisfaction with the school's current methods of teaching and learning, proceed with a discussion of the **implications** of this conclusion.

Consequences and Implications

> Using the data collected by one or more groups, lead the group in a discussion of the implications of their findings. Pose one or more of the following questions for discussion.

- Assuming that our traditional, discipline-based approaches to curriculum are losing some children, do we want to pursue some alternatives?

- If we were to undertake curriculum integration, how would our lives as teachers change?
- What supports would we require, to make a successful transition into integration as a regular way of teaching and learning? Is the administration committed? Are administrators willing to find a way to provide the supports we would need?
- What are the potential benefits to students in a school without traditional boundaries? What are the risks to students?
- What are the implications of curriculum integration for testing? For college entry?
- How can we involve students and parents in making this decision for our school?
- Are any of us already integrating curriculum at some level? How is it working? Do we know any other schools that have tried integrating curriculum? What is their advice?
- If we were to try integration, which model(s) would we like to try? What are our goals?
- Where would we begin? Who of us should begin? Should we implement in phases? Should we have a trial year? A year of study? Do we need more information?

Activity 6
A Look at the Facilitative Conditions: Is Our School Ready?

Time:

60 minutes

Purpose:

To assess the school's readiness for curriculum integration by identifying conditions in the school that will (a) facilitate and (b) constrain movement toward successful integration of curriculum and instruction.

Materials:

Easel pads, masking tape, markers for four groups
Copies of *Dissolving the Boundaries* for each participant
Participant hand-out with instructions for each of four groups
Overhead 6-A (optional)

Description:

Divide the group into four subgroups, assigning each group to one of the four conditions discussed in *Dissolving the Boundaries*, Section 2: "Assessing Your Readiness for Curriculum Integration." A suggested strategy for moving through this activity follows:

a. Each group should select a facilitator and a recorder.

b. Individually read from *Dissolving the Boundaries* about the condition assigned to the group.

c. As you read, think about this school in relation to the elements discussed in your assigned reading. Make a tentative assessment of how well your assigned condition is met in this school. Individually reflect and generate a list of answers to the following two questions:

   - What factors in our school will ease the movement toward curriculum integration? What is present in our school that will assist in the transition?
   - What factors in our school will impede the movement toward curriculum integration? What is present in our school that will hinder and constrain the transition?

d. Share ideas with all group members. Record the group's ideas about factors in the school that will facilitate the movement to fully integrated curriculum and instruction. Post.

e. Make a list of the factors present in the school that will restrict or constrain such movement. Post.

f. Have the groups move (clockwise) around the room to read the list of factors generated by other groups. Allow about five minutes at each of the other three stations. After the gallery walk, see if anyone has any insights about the positive strengths of the school–or about the constraining and negative forces at work in the school that will need to be overcome.

Notes:

Force-field analysis is the name given to an activity in which groups identify forces that restrain and facilitate movement away from the current status and toward a desired goal. The facilitator may want to share a picture of the force-field process (such as that on Overhead 6-A) with the group. After identifying restraining forces, the group's next task is to brainstorm strategies that will help to overcome those constraints. This is the main task of Activity 8.

The working groups should be small: between three and eight people. If you have a very large group (more than 32), you may want to create more than four subgroups and assign the same condition to more than one group.

To give groups a quick and easy way to select a facilitator or recorder, you might offer some assistance. Suggest that the facilitator be the person whose birthday is closest to today; the recorder might be the person wearing the most red.

Before groups discuss the factors, time should be allowed for individual reflection. This individual reflection time ensures that everyone has an equal opportunity to generate ideas and that all people have the opportunity to think, for themselves, about the school's strengths and weaknesses. Then, when the sharing begins, everyone has something to contribute. This process tends to avoid two common problems with group work: (a) domination by one outspoken person and (b) the withdrawal or noninvolvement of one or more participants.

Use a share-around process for the small group sharing of ideas. One person shares an idea, then moving in a clockwise direction, others share one of their ideas in turn. No one suggests an idea that has already been offered by someone else in the group; however, if an idea triggers a new idea, that one should be mentioned. If people have no ideas to contribute (that is, all the ideas on their list have been mentioned previously) they may pass.

It is helpful if the facilitator establishes a time frame for each activity--even setting a kitchen timer that rings after each step in the process. In this way, the small groups move at about the same speed and tend to stay on task.

Alternative:

You may want to use a cooperative learning strategy such as Jigsaw for this activity. The steps are outlined below:

- Divide the large group into smaller groups of four or more people. Within this home group, each individual takes responsibility to read about (and become expert in) one of the four conditions presented in Section II of *Dissolving the Boundaries*. (10-15 minutes to organize)
- Members with the same condition get together in expert groups, individually read about their assigned condition, and discuss how well their school meets these conditions. (20-30 minutes to read and discuss)
- Experts return to their original home groups, each one explaining the condition about which they have read and discussed. Allow about five minutes for each expert to share with others in the home group. (20 minutes to share learnings)

Activity 7
A Look at the Pros and Cons: Where Do I Weigh In?

Time:

20-40 minutes

Purpose:

Having posted and reviewed both the benefits--or driving forces--(from Activities 3, 4, and 6) and the restraining forces (Activities 5 and 6), it is time now for participants to make a public showing of whether or not they want to proceed with curriculum integration--as they understand it. The purpose of this activity is to reach consensus about whether or not the school will begin to integrate curriculum.

Materials:

Overheads 7-A and 7-B

Description:

Ask people to reflect on the following statement: "Curriculum integration offers great potential to improve our students' learning; I am willing to support efforts to integrate the curriculum and instruction in our school." (Overhead 7-A) Post it on easel paper or on an overhead transparency so that people can see it clearly.

Suggest the use of "Fist of Five" for group decisionmaking. It allows everyone to make a public showing of the extent of support for a decision without lengthy explanations. It allows the facilitator to know the extent of the support within a group, and the people who do not strongly support an idea. Explain the process thoroughly and, if everyone agrees to its use, proceed. Participants hold up their fists with 0-5 fingers raised, indicating their level of support. Here's what each gesture indicates: (Overhead 7-B)

- **Fist** = I can't live with the decision; I will block it or leave the group.
- **One Finger** = I can live with the decision; I don't like it but I won't block it.
- **Two Fingers** = I am not excited by the decision; I will do some work to support it.
- **Three Fingers** = I think the decision is okay; I will work to support it.
- **Four Fingers** = I think the decision is good; I will work hard to support it.
- **Five Fingers** = I think the decision is great; I will gladly support it.

Participants who raise a fist are asked to explain their objections with the group decision. They do not have to have a solution, but must be able to discuss their interests and problems. The group continues to work and discuss until no fists are raised.

Notes:

There are numerous benefits to a strategy such as "Fist of Five." All participants, by raising their fingers, are making a public statement that they support the group decision and will not sabotage it. Everyone is also making a public commitment to get involved with the new plan. Consensus means that everyone's opinions are heard and encouraged and all members share the final decision, agreeing not to sabotage the group decision. It does not mean that all get their first choice or that everyone unanimously agrees with the decision.

Alternative:

The facilitator may prefer open-ended discussion after presenting the statement on the overhead.

Posting signs down the side of one wall, from "Strongly Agree" to "Strongly Disagree," ask participants to form a peoplegraph for a visual display of their support of the statement about curriculum integration. Call for some discussion about the reasons for not supporting it. It is possible, of course, for part of a faculty to begin curriculum integration efforts without the entire faculty's supporting the efforts. But it is important to remember that everyone will be affected in some ways. At the very least, if there are teachers who do not want to try curriculum integration, try to get them to agree to support the efforts of those who do want to begin--or increase--efforts to integrate.

Activity 8
A Plan for the Journey: Now that we Know Where We Are and Where We Want to Be, How Do We Get There?

Time:
Ongoing; initially 90-120 minutes

Purpose:
To plan for curriculum integration in our school.

Materials:
- Lists of constraining factors from Activity 6
- Copies of *Dissolving the Boundaries*

Description:
Review the restraining factors and begin to brainstorm ways to minimize each of them. Answer some basic questions:

- What is our vision for curriculum integration?
- Who is involved and over what period of time?
- How will we organize teams?
- How will we select team members?
- Who will receive training--and when and where?
- How will we revise the schedule?
- Are there schools we can visit (or phone) who could advise us as we begin this journey?
- Are there additional materials on curriculum integration and teamed instruction that we can read?

Notes:
Participants should read Section III of *Dissolving the Boundaries* before this meeting.

This activity may not involve the entire faculty. It would be reasonable to convene a small, planning group that would begin to address some of these questions and issues. It will be important, however, to bring the work back to the entire faculty for information and for discussion.

Participant Handouts

Activity 3

Activity 5

Activity 6

Participant Handout for the Parallel Disciplines Stage of Curriculum Integration

In this cooperative learning activity, the members of your group will read about, discuss, and prepare a presentation to the rest of the groups about curriculum integration as it looks in the stage called **parallel disciplines.**

Follow the directions below to complete the activity.

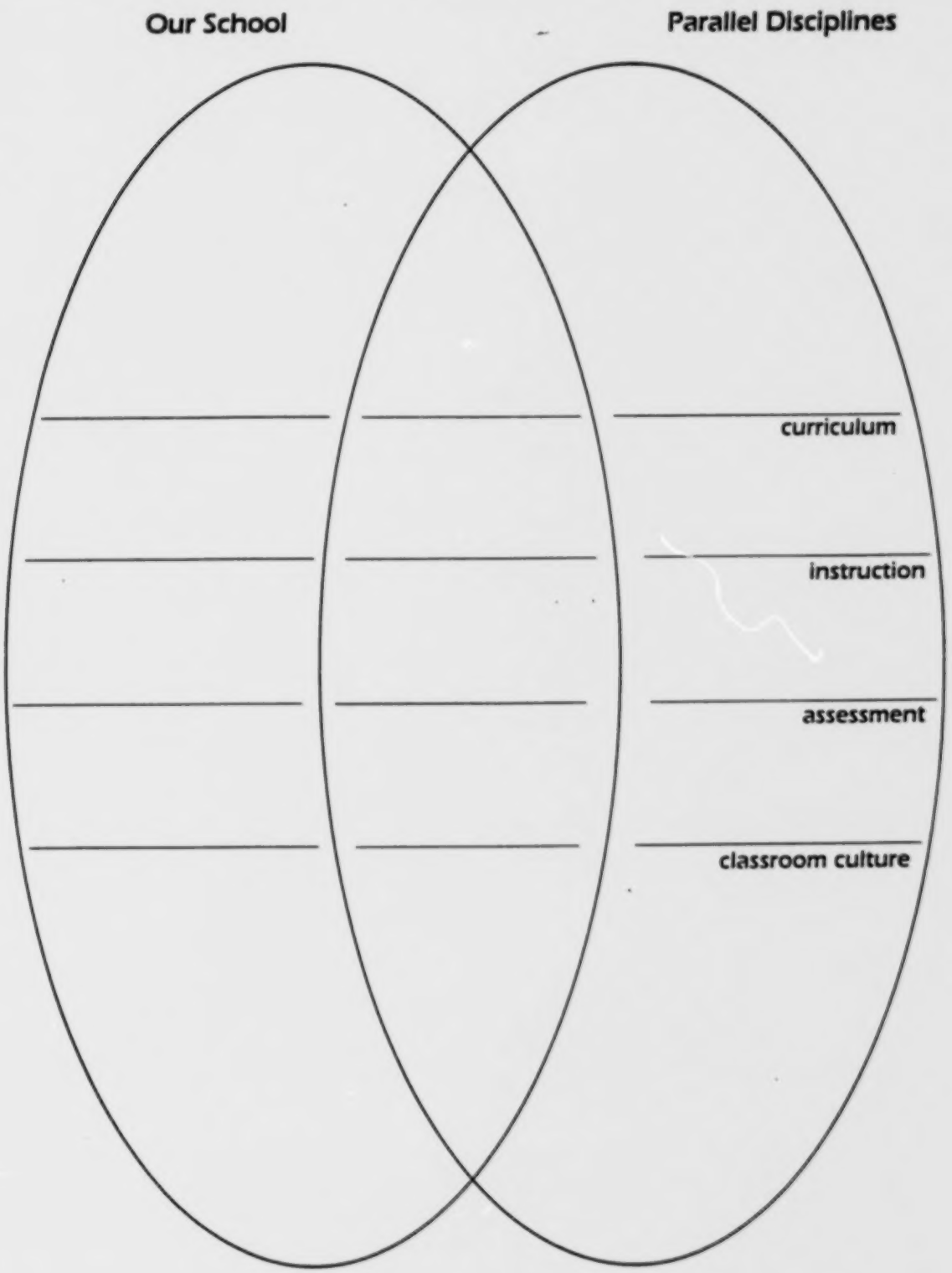
1. Individually, read about parallel disciplines in *Dissolving the Boundaries*, pp. 6-10 and 74-75.

2. As a group, using the reading you have done and information in the chart on page 8, develop a working definition or description of your assigned stage.

3. Compare and contrast the assigned stage to current instructional practice in your school. Use the attached Venn Diagram to guide your thinking. Identify your school's approach to the four variables used on the chart (p. 8): (a) curriculum, (b) instruction, (c) assessment, and (d) classroom culture. Record these descriptions in the circle labeled, "Our School." Record descriptions for parallel disciplines in its appropriate circle. Look for any similarities. Record these in the space where the two circles overlap.

4. Now that you have a handle on what parallel disciplines looks like (especially as compared to your current school structures), reflect on the potential benefits to students. Record the benefits on an easel chart.

5. Prepare a presentation (of no more than five minutes) to the entire group that will give an overview of parallel disciplines as a stage of curriculum integration. The presentation may be in any style: lecture (with accompanying overheads and other graphics); demonstration (a skit or role-play of an actual classroom that operates in this stage); or other creative methods of teaching this information to the entire group.



Handout, Activity 3

Participant Handout for the Multidisciplinary Stage of Curriculum Integration

In this cooperative learning activity, the members of your group will read about, discuss, and prepare a presentation to the rest of the groups about curriculum integration as it looks in the stage called **multidisciplinary.**

Follow the directions below to complete the activity.

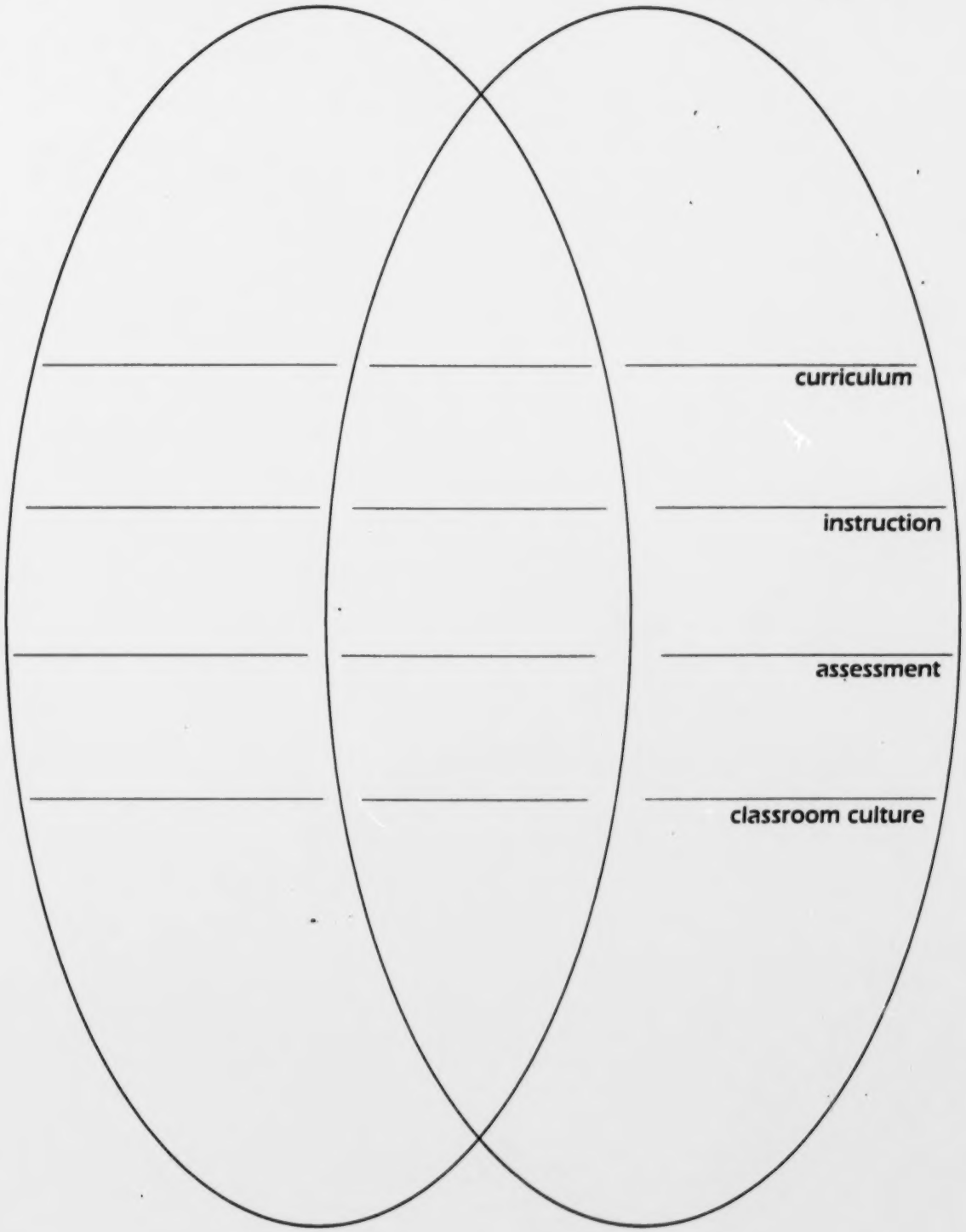
1. Individually, read about multidisciplinary in *Dissolving the Boundaries,* pp. 6-8, 10-11, and 76-77.

2. As a group, using the reading you have done and information in the chart on page 8, develop a working definition or description of your assigned stage.

3. Compare and contrast the assigned stage to current instructional practice in your school. Use the attached Venn Diagram to guide your thinking. Identify your school's approach to the four variables used on the chart (p. 8): (a) curriculum, (b) instruction, (c) assessment, and (d) classroom culture. Record these descriptions in the circle labeled, "Our School." Record descriptions for multidisciplinary in its appropriate circle. Look for any similarities. Record these in the space where the two circles overlap.

4. Now that you have a handle on what multidisciplinary integration looks like (especially as compared to your current school structures), reflect on the potential benefits to students. Record the benefits on an easel chart.

5. Prepare a presentation (of no more than five minutes) to the entire group that will give an overview of the multidisciplinary stage of curriculum integration. The presentation may be in any style: lecture (with accompanying overheads and other graphics); demonstration (a skit or role-play of an actual classroom that operates in this stage); or other creative methods of teaching this information to the entire group.



Handout, Activity 3

Participant Handout for the Interdisciplinary Stage of Curriculum Integration

In this cooperative learning activity, the members of your group will read about, discuss, and prepare a presentation to the rest of the groups about curriculum integration as it looks in the stage called **interdisciplinary.**

Follow the directions below to complete the activity.

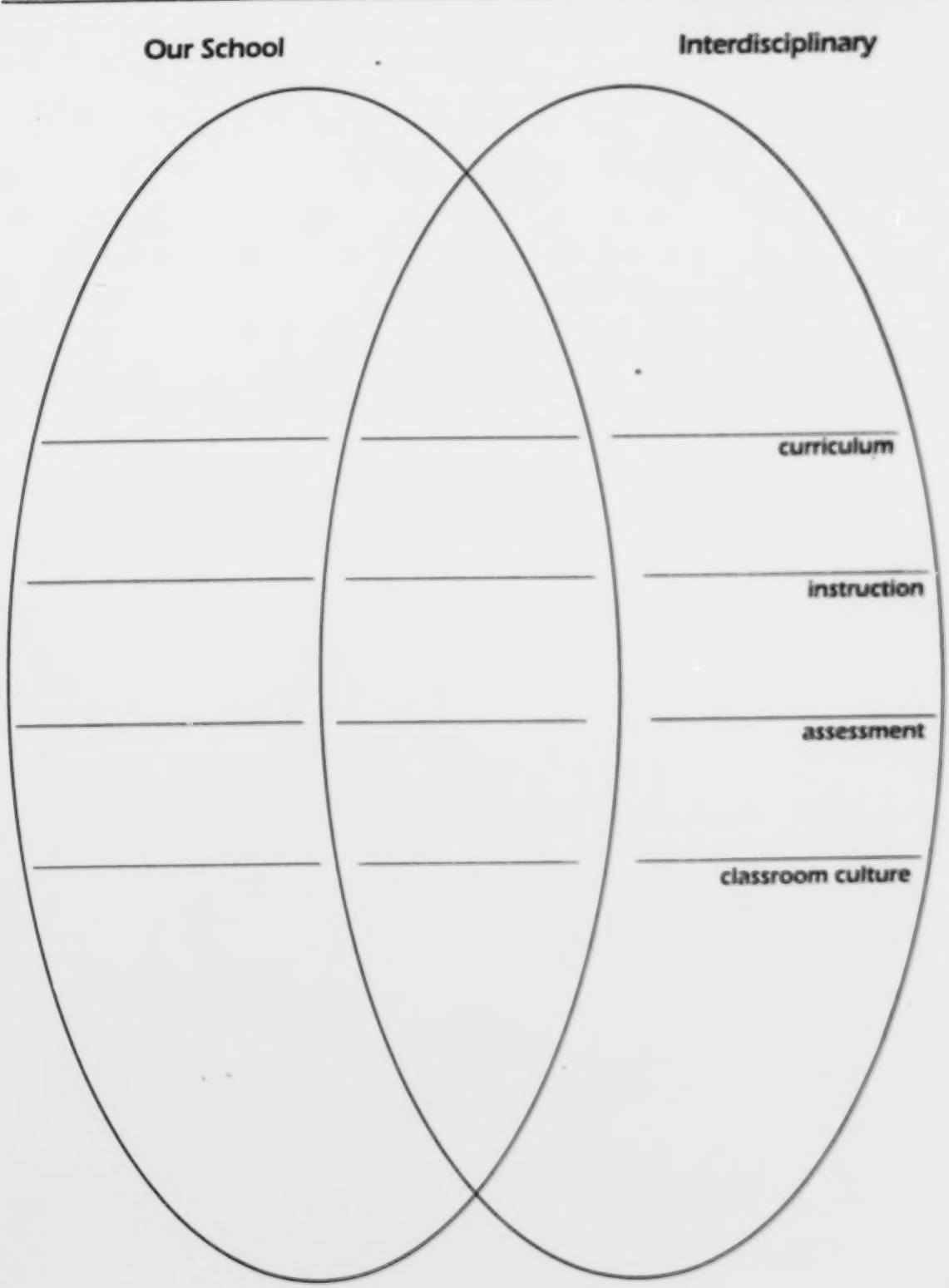
1. Individually, read about interdisciplinary in *Dissolving the Boundaries*, pp. 6-8, 12-13, and 78-79.

2. As a group, using the reading you have done and information in the chart on page 8, develop a working definition or description of your assigned stage.

3. Compare and contrast the assigned stage to current instructional practice in your school. Use the attached Venn Diagram to guide your thinking. Identify your school's approach to the four variables used on the chart (p. 8): (a) curriculum, (b) instruction, (c) assessment, and (d) classroom culture. Record these descriptions in the circle labeled, "Our School." Record descriptions for interdisciplinary in its appropriate circle. Look for any similarities. Record these in the space where the two circles overlap.

4. Now that you have a handle on what interdisciplinary integration looks like (especially as compared to your current school structures), reflect on the potential benefits to students. Record the benefits on an easel chart.

5. Prepare a presentation (of no more than five minutes) to the entire group that will give an overview of the interdisciplinary stage of curriculum integration. The presentation may be in any style: lecture (with accompanying overheads and other graphics); demonstration (a skit or role-play of an actual classroom that operates in this stage); or other creative methods of teaching this information to the entire group.



Handout, Activity 3

Participant Handout for the Integrated Stage of Curriculum Integration

In this cooperative learning activity, the members of your group will read about, discuss, and prepare a presentation to the rest of the groups about curriculum integration as it looks in the stage called **integrated.**

Follow the directions below to complete the activity.

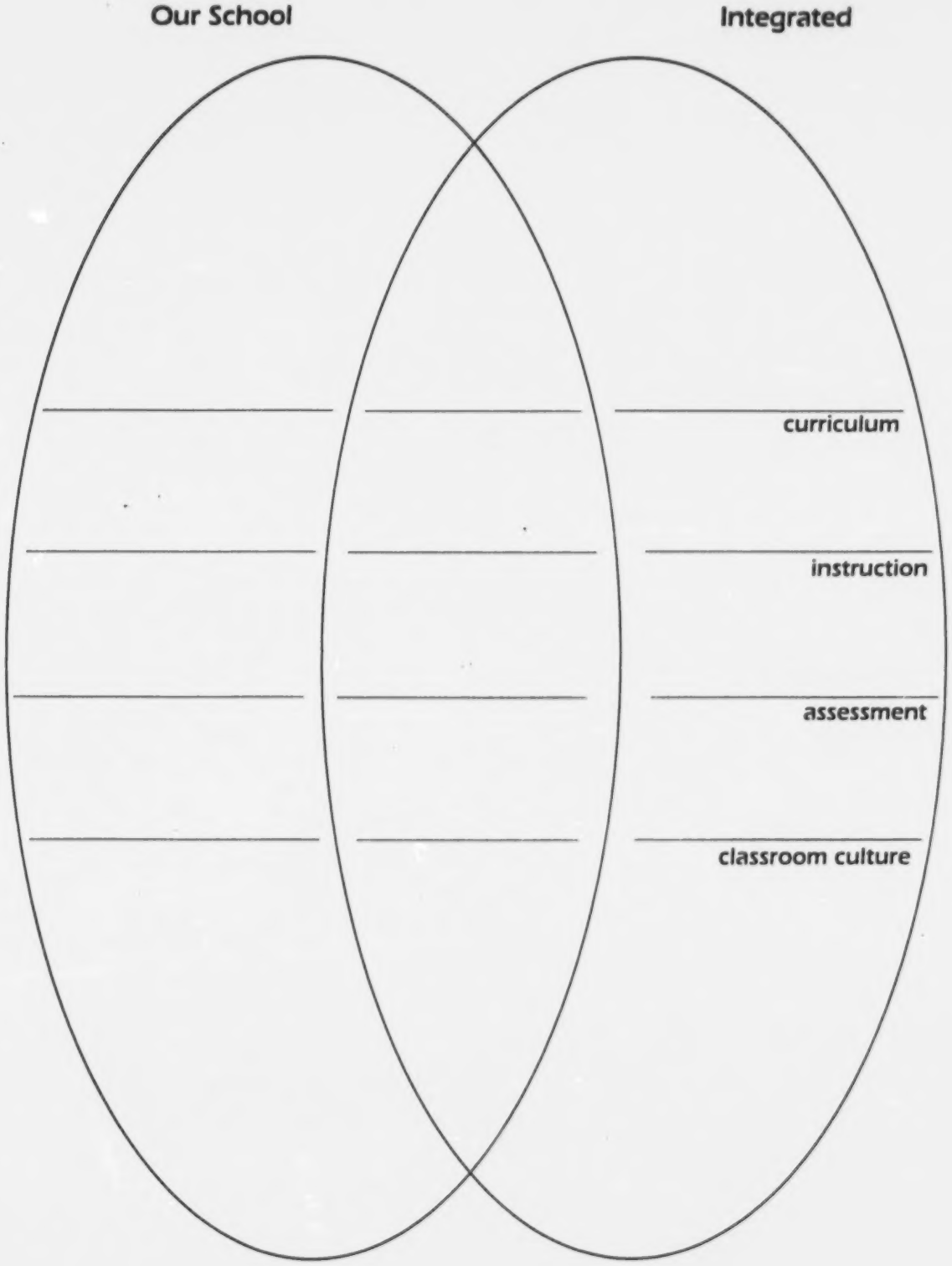
1. Individually, read about integrated in *Dissolving the Boundaries,* pp. 6-8, 14-15, and 80-81.

2. As a group, using the reading you have done and information in the chart on page 8, develop a working definition or description of your assigned stage.

3. Compare and contrast the assigned stage to current instructional practice in your school. Use the attached Venn Diagram to guide your thinking. Identify your school's approach to the four variables used on the chart (p. 8): (a) curriculum, (b) instruction, (c) assessment, and (d) classroom culture. Record these descriptions in the circle labeled, "Our School." Record descriptions for integrated in its appropriate circle. Look for any similarities. Record these in the space where the two circles overlap.

4. Now that you have a handle on what the integrated stage of integration looks like (especially as compared to your current school structures), reflect on the potential benefits to students. Record the benefits on an easel chart.

5. Prepare a presentation (of no more than five minutes) to the entire group that will give an overview of the integrated stage of curriculum integration. The presentation may be in any style: lecture (with accompanying overheads and other graphics); demonstration (a skit or role-play of an actual classroom that operates in this stage); or other creative methods of teaching this information to the entire group.



Handout, Activity 3

Participant Handout for the Transdisciplinary Stage of Curriculum Integration

In this cooperative learning activity, the members of your group will read about, discuss, and prepare a presentation to the rest of the groups about curriculum integration as it looks in the stage called **transdisciplinary.**

Follow the directions below to complete the activity.

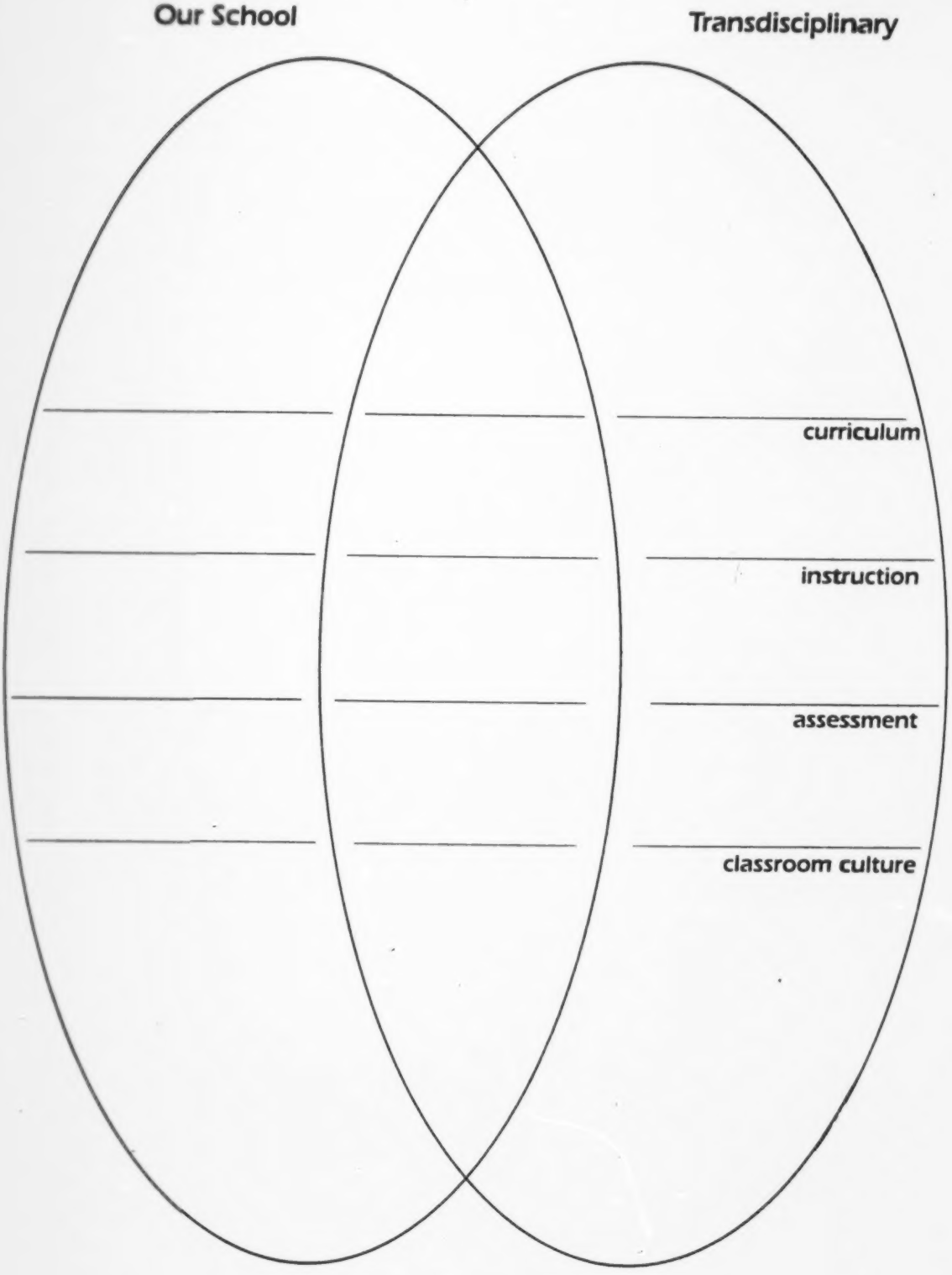
1. Individually, read about transdisciplinary in *Dissolving the Boundaries,* pp. 6-8, 16-17, and 82-83.

2. As a group, using the reading you have done and information in the chart on page 8, develop a working definition or description of your assigned stage.

3. Compare and contrast the assigned stage to current instructional practice in your school. Use the attached Venn Diagram to guide your thinking. Identify your school's approach to the four variables used on the chart (p. 8): (a) curriculum, (b) instruction, (c) assessment, and (d) classroom culture. Record these descriptions in the circle labeled, "Our School." Record descriptions for transdisciplinary in its appropriate circle. Look for any similarities. Record these in the space where the two circles overlap.

4. Now that you have a handle on what transdisciplinary integration looks like (especially as compared to your current school structures), reflect on the potential benefits to students. Record the benefits on an easel chart.

5. Prepare a presentation (of no more than five minutes) to the entire group that will give an overview of the transdisciplinary stage of curriculum integration. The presentation may be in any style: lecture (with accompanying overheads and other graphics); demonstration (a skit or role-play of an actual classroom that operates in this stage); or other creative methods of teaching this information to the entire group.



Handout for Activity 3

Philosophers

The philosophers' job is to review expert opinion related to the questions at issue. They will critically read articles from professional journals, excerpts from books, research reports, and other related publications. Their purpose in reading is to analyze, interpret, and critique their sources in such a manner as to make an evaluation of their validity and worthwhileness to the rest of the group. Ultimately, the philosophers will synthesize their findings and make inferences, as appropriate, for reporting back to the group.

Two primary tools are available to the philosophers: (1) critical reading and (2) shared inquiry and discussion with colleagues. Critical reading is active and demanding; essential to critical reading is the reader's active engagement through the continuous asking of questions about the content and the author(s). Routinely, critical readers will pose such questions as: What is the author's point of view or perspective? Does this perspective explain why certain facts and concepts are included and others are excluded? What can I imply from what the author has written? What reasons and examples does the author provide to support a particular position?

Following individual reading and notetaking, philosophers will want to come together as a team to share reactions and to analyze their findings. In this meeting they will first share individual reading experiences and then think together about their diverse findings. Certainly, philosophers will benefit by referring to the eight elements of reasoning as they proceed in their discussions.

Philosophers may want to choose from some of the books and articles listed below. Philosophers should not feel constrained by the materials suggested; rather, they are encouraged to extend their reading by browsing in the library, inquiring of colleagues as to pertinent literature, and following up on interesting citations in bibliographies of the suggested sources.

Suggested Books for the Philosophers

Adler, M. J. (1982). *The pideia proposal: An educational manifesto.* New York: Macmillan Publishing Company.

Beane, J. (Ed.). (1995). *Toward a coherent curriculum.* Alexandria, VA: Association for Supervision and Curriculum Development. (*particularly in Chapters 1 and 2)

Brown, R. G. (1991). *Schools of thought.* San Francisco: Jossey-Bass. (*particularly Chapters 6 and 8)

Caine, R. & Caine, G. (1991). *Making connections: Teaching and the human brain.* Alexandria, VA: Association for Supervision and Curriculum Development.

Carnegie Council on Adolescent Development. (1989). *Turning points: Preparing American youth for the 21st century.* Washington, DC: Carnegie Corporation.

Fullan, M. (1991). *The new meaning of educational change.* New York: Teachers College Press.

Gardner, H. (1983). *Frames of mind.* New York: Basic Books.

Goodlad, J. (1984). *A place called school.* New York: McGraw-Hill.

Marshall, R. & Tucker, M. (1992). *Thinking for a living: Education and the wealth of nations.* New York: Basic Books.

Perkins, D. (1992). *Smart schools: From training memories to educating minds.* New York: The Free Press.

Schlecty, P. (1991). *Schools for the 21st century.* San Francisco: Jossey-Bass.

Sizer, T. (1992). *Horace's school: Redesigning the American high school.* Boston: Houghton Mifflin.

Suggested Articles for the Philosophers

Benjamin, S. (1989). An ideascape for education: What futurists recommend. *Educational Leadership, 47*(1), 8-14.

Crowell, S. (1989). A new way of thinking: The challenge of the future. *Educational Leadership, 47*(1), 60-63.

Dempster, F. N. (1993). Exposing our students to less should help them learn more. *Phi Delta Kappan, 74*(6), 433-437.

Glasser, W. (1992). The quality school curriculum. *Phi Delta Kappan, 73*(9), 690-694.

Kohn, A. (1993). Choices for children: Why and how to let students decide. *Phi Delta Kappan, 74*(1), 8-20.

Meier, D. (1995). How our schools could be. *Phi Delta Kappan, 76*(5), 369-373.

Newmann, F. (1991). Linking restructuring to authentic student achievement. *Phi Delta Kappan, 72*(6), 458-463.

Newmann, F. & Wehlage, G. (1993). Five standards of authentic instruction. *Educational Leadership, 50*(7), 8-12.

Noddings, N. (1995). A morally defensible mission for schools in the 21st century. *Phi Delta Kappan, 76*(5), 365-368.

Perkins, D. N. (1991). Educating for insight. *Educational Leadership, 49*(2), 4-8.

Analysts

The responsibility of the analysts is to identify existing information and data sources that may shed light on the questions at issue. They should analyze these data in ways that will allow them to draw meaning and inferences. Analysts draw from both statistical records and reports as well as narrative documents. They may decide to look at data that is computerized or has otherwise been aggregated, or they may take on the task themselves of analyzing and aggregating data.

This action research team's work will be greatly enhanced by their attention to an all-important skill of critical thinkers: distinguishing relevant from irrelevant facts. As they begin the work of identifying relevant sources, they will be challenged to think divergently in order to identify the universe of candidate sources. However, as their work proceeds, they must eliminate sources that are not truly relevant to the questions at issue. Data can be overwhelming. The challenge is to plow through the mounds of existing data and select that which is most directly pertinent. This will more likely be accomplished when the analysts work together in a collegial and collaborative manner.

Suggestions for Data to Be Analyzed:

1. How many of our students graduate? Are our students successful when they do graduate? How many go on to higher education? With what results? How many are satisfactorily employed?

2. How many discipline problems do we have each week? What conclusions can we draw?

3. What skills, knowledge, and attitudes do students need for the 21st century? (For references to read, see the philosophers; they may be able to suggest appropriate readings along this line.) Does our school teach these skills and this knowledge? In which courses? What changes have we made over the last 10 or 20 years in the curriculum/courses/course content offered to students?

4. Are some of our students falling through the cracks? What is the grade point average of students in our school? Do some students consistently and repeatedly fail? What percentage of students in our school fail one or more classes? Do students' grade point averages change once they enter our school? Are students tracked--toward success or toward failure?

5. What is our attendance rate--of students and of teachers? What inferences/conclusions can we draw based on this evidence?

6. How do our students score on standardized tests? Some of the items on any standardized test are measures of critical thinking and problem solving. How do our students perform on those particular items? What does our school do to help improve student scores on these kinds of items? What other measures do we have (or could we have) to determine how well students have mastered knowledge and skills?

People Watchers

The people watchers' job is to observe actively within the school and community. Their mission is to identify the individuals and groups whose behaviors might speak loudly regarding the questions at issue. Primary among these should be students--for they are central to all educational inquiries. Additionally, people watchers may decide to focus attention upon teachers, parents, administrators, or graduates. Most often, people watchers will conduct shadow studies; that is, they will observe their subjects in action. Obviously, this action research team will need to agree upon the context for their observations as well as the questions they hope to answer as a result of the watching they do.

People watchers have five major considerations as they structure their research: (1) What questions might they be able to answer by watching groups of people? (2) What individuals and groups will be most relevant to the questions raised? (3) When and how will they observe selected groups? (4) What kind of record will they make of their observations? (5) How will they go about analyzing and making meaning of their observations?

Once team members have agreed upon the groups of people to watch, the settings in which to watch, and the purposes for observing, they need to agree upon a standard for recording the information. They may decide to make a checklist or to take informal notes, recording their impressions.

People watchers will report results, findings, and any inferences to the rest of the group.

Suggestions for People Watchers:

1. Observe to see if you can answer the question about whether or not the current school climate facilitates learning. Is it a climate which promotes collegiality and collaboration? Or is the climate competitive and isolated?

   A. Shadow a teacher in the building. During the course of a day, how often does that teacher talk to another teacher? For what purpose? How often do teachers work together to plan or teach?

   B. Observe students. In class, how often do they work together?

2. Observe to see if students are engaged with the material being taught. Shadow a low achiever (or high achiever) through two or more classes.

   A. Describe the activities in the classroom and record what that student is doing. (Develop categories such as: teacher lecture, teacher questioning to check for comprehension, large group discussion, student working independently, small group work, etc.)

   B. How often does the student appear engaged? When is he or she most engaged (on which of the above kinds of activities)?

   C. Describe the transition from one subject (course) to another. Do the teachers encourage connection making between subjects? Is the information interesting? Is the topic meaningful? (With what data do you make this inference?)

3. Observe the people who work in local businesses. What skills do they seem to need in order to do their jobs successfully? Does our school's curriculum stress these skills?

Surveyors

The surveyors will use quantifiable data to study the questions at issue. They may choose to collect perceptual data, that is, attitudes and opinions related to the questions; or they may choose to collect data about actual behaviors. Their job is to try to answer the following questions: What are the perceptions, attitudes, and opinions of teachers, students, parents, board members, and others? Do these opinions shed any light on whether or not the following statement is true:

> *Our traditional, discipline-based approach to curriculum and instruction does not adequately prepare our students for life in the 21st century.*

Do different role groups have different perceptions? Are any of these attitudes or opinions surprising--or contrary to what we think we believe about how well our school is preparing students for life in the 21st century? How do behaviors match up with beliefs?

Surveyors have four major tasks: (1) develop an appropriate survey; (2) administer the instrument; (3) score, tabulate, and summarize the responses; and (4) analyze the data, looking for inferences that they might draw.

NOTE: Surveyors can collect information through paper-and-pencil instruments or they can use interviews. Both approaches have advantages and disadvantages. The primary advantage of the written instrument is that more people can be surveyed in a shorter period of time; the disadvantage is that you are less likely to get the depth of information which might be gathered in a face-to-face survey. In either approach, questions need to be carefully formulated before you begin. The questions should also be piloted or tried out to see if they will yield the information you seek.

Think about whether you want to use open-ended questions (in which respondents provide their own answers) or closed questions (in which respondents select from among several possible response options). Both formats have advantages and disadvantages; the closed questions are quicker and easier to score. To score and analyze open-ended questions requires reading through responses and categorizing answers, looking for trends as well as unique responses.

Suggestions for Surveyors:

1. Interview or survey students about their perceptions of how well the school is preparing them for life in the next several decades. What do they think are important skills, knowledge, and attitudes for successful life in the 21st century? How well do they believe our school provides these? (The open-end question may be somewhat obvious. However, students may not have thought much about such a question; their responses may be limited by their experiences with current curriculum offerings. To prepare possible responses for closed-response questions,

see some of the philosophers' suggested reading materials. Many people have written knowledgeably and persuasively about the skills and knowledge they believe are important for successful life in the world today. You may want to consult these writings as you prepare response options for students to consider. In this way, the survey could serve to educate as well as gather opinions.)

2. Interview or survey parents. What do they think are important skills, knowledge, and attitudes for students to be learning in order to be successful in the 21st century? In their opinion, is the school doing an adequate job in teaching these to students?

3. Interview or survey teachers. What do they believe is important for students to learn? How well do they think ALL students are learning in the current school?

4. Interview or survey community members who are not parents. What is their perception about how well the school is preparing students for a successful future?

5. How interested are teachers in working together? Are they willing to collaborate? Can they see any benefits in changing the working climate of the school?

Storytellers

Storytellers have the opportunity to reflect on their own experiences and to hear about the experiences of colleagues. They seek stories that: (1) describe a poignant moment or a critical incident, (2) focus upon an achievement or disappointment, (3) distill an ageless principle or truth, or (4) focus upon a simple technique or renewed understanding.

Storytellers will gather the raw materials for their stories by "talking around." They may want to begin by reflecting on personal experiences and crafting stories of their own. They could begin interviews with colleagues by simply asking if the following statement calls to mind a story they would be willing to share:

> ***Our traditional, discipline-based approach to curriculum and instruction does not adequately prepare our students for life in the 21st century.***

The storytellers should each collect at least three or four stories--from their own experience, from that of colleagues and friends, and from students themselves--and try to develop a tapestry of experience that sheds light. Storytellers can tape-record the stories or take notes as stories are told. When they meet to talk about and analyze the stories they have collected, the storytellers should attempt to identify recurring themes, morals, messages, heroes and heroines, or other outstanding features of the collection. They may also wish to give each story a brief title. They should identify stories that they'll want to feature in their report to the rest of the group. Time will not permit the telling of all the stories so they may want to select the ones that are the most telling.

Suggestions for Storytellers:

1. Unsung Heroes
   Can you tell a story about having helped a student in need? Perhaps it was a situation in which you went "above and beyond" the call of duty--to do something that schools and teachers are not generally set up to do for students.

2. Disconnected and Unplugged
   Can you remember a student who seemed totally unengaged ("tuned out" and "turned off") to class and to school? What was it about the school that fostered that state? What did you try, albeit unsuccessfully, to bring that student back into the current?

3. The Depths of Despair and the Mountaintop Experiences
   Tell a story about the ups and downs of teaching: (a) sometime when the seeming futility of teaching overtook you and (b) sometime when the rewards of teaching seemed

boundless--when no amount of money could have persuaded you to take a different career. What were the triggers?

4. Memories
   What do you remember about your school experiences--both good and bad? What situations and activities are the most memorable? What seemed to help you connect with the subject matter? When did you think it was all pointless and meaningless?

5. What's It All About, Alfie?
   Did you ever take a course during which you asked yourself throughout, "So what? What's the point? When will I ever need this?" Did a time come when it was helpful, even though you didn't see the need at the time--or have you failed to ever see the relevance?

6. I Laughed 'Til I Cried
   Can you remember an especially funny time in your teaching career? (Maybe it was triggered by a funny answer, an impossible test, or a ridiculous question, etc.)

7. If They Can Do It, So Can I
   Talk to teachers who have transformed teaching and learning in their class or school--perhaps some version of curriculum integration. What stories do they have to share? What were the benefits? What have been the problems? Did they have any "light bulb" flashes of understanding that would illuminate our journey?

Condition One: Collaborative School Culture

Curriculum integration doesn't just happen. Teachers work hard to make it happen; but even with hard work and energy, schools are not always successful in integrating curriculum and instruction. Sometimes the lack of success can be attributed to one of four conditions that seem to predict success in such an innovation. Your group will read about the factors related to one of these conditions, "Collaborative School Culture." Having read about it, your job will be to assess your own school, using the factors related to this condition.

As your group forms, select a person to serve as facilitator of your group. In addition, select a recorder.

1. Individually, read about Condition One, Collaborative School Culture, pp. 21-25, in *Dissolving the Boundaries*. As you read, think about your own school. How would you assess it on some of the factors that are mentioned in this reading?

2. Identify the school's strengths. Make a list of the factors (related to this condition) in your school that will ease and assist the movement toward curriculum integration.

3. Similarly, identify the factors (related to "Collaborative School Culture") that will hinder the movement toward integrated curriculum and instruction.

4. After people in your group have generated lists individually, share around the strengths. Then share the weaknesses. The recorder should make two lists to post for others in the room to read about.

Factors that will **assist** the integration of curriculum and instruction in our school:	Factors that will **impede** the integration of curriculum and instruction in our school:

Handout, Activity 6

Condition Two: Compatible Core Beliefs

Curriculum integration doesn't just happen. Teachers work hard to make it happen; but even with hard work and energy, schools are not always successful in integrating curriculum and instruction. Sometimes the lack of success can be attributed to one of four conditions that seem to predict success in such an innovation. Your group will read about the factors related to one of these conditions, "Compatible Core Beliefs." Having read about it, your job will be to assess your own school, using the factors related to this condition.

As your group forms, select a person to serve as facilitator of your group. In addition, select a recorder.

1. Individually, read about Condition Two, Compatible Core Beliefs, pp. 21-22 and 26-30, in *Dissolving the Boundaries*. As you read, think about your own school. How would you assess it on some of the factors that are mentioned in this reading?

2. Identify the school's strengths. Make a list of the factors (related to this condition) in your school that will ease and assist the movement toward curriculum integration.

3. Similarly, identify the factors related to "Compatible Core Beliefs" that will hinder the movement toward integrated curriculum and instruction.

4. After people in your group have generated lists individually, share around the strengths. Then share the weaknesses. The recorder should make two lists to post for others in the room to read about.

Factors that will **assist** the integration of curriculum and instruction in our school:	Factors that will **impede** the integration of curriculum and instruction in our school:

Handout, Activity 6

Condition Three: Supports for Change

Curriculum integration doesn't just happen. Teachers work hard to make it happen; but even with hard work and energy, schools are not always successful in integrating curriculum and instruction. Sometimes the lack of success can be attributed to one of four conditions that seem to predict success in such an innovation. Your group will read about the factors related to one of these conditions, "Supports for Change." Having read about it, your job will be to assess your own school, using the factors related to this condition.

As your group forms, select a person to serve as facilitator of your group. In addition, select a recorder.

1. Individually, read about Condition Three, Supports for Change, pp. 21-22 and 31-37, in *Dissolving the Boundaries*. As you read, think about your own school. How would you assess it on some of the factors that are mentioned in this reading?

2. Identify the school's strengths. Make a list of the factors (related to "Supports for Change") in your school that will ease and assist the movement toward curriculum integration.

3. Similarly, identify the factors related to this condition that will hinder the movement toward integrated curriculum and instruction.

4. After people in your group have generated lists individually, share around the strengths. Then share the weaknesses. The recorder should make two lists to post for others in the room to read about.

Factors that will **assist** the integration of curriculum and instruction in our school:	Factors that will **impede** the integration of curriculum and instruction in our school:

Handout, Activity 6

Condition Four: Facilitating Structures

Curriculum integration doesn't just happen. Teachers work hard to make it happen; but even with hard work and energy, schools are not always successful in integrating curriculum and instruction. Sometimes the lack of success can be attributed to one of four conditions that seem to predict success in such an innovation. Your group will read about the factors related to one of these conditions, "Facilitating Structures." Having read about it, your job will be to try to assess your own school, using the factors related to this condition.

As your group forms, select a person to serve as facilitator of your group. In addition, select a recorder.

1. Individually, read about Condition Four, Facilitating Structures, pp. 21-22 and 38-45, in *Dissolving the Boundaries*. As you read, think about your own school. How would you assess it on some of the factors that are mentioned in this reading?

2. Identify the school's strengths. Make a list of the factors (related to this condition) in your school that will ease and assist the movement toward curriculum integration.

3. Similarly, identify the factors related to "Facilitating Structures" that will hinder the movement toward integrated curriculum and instruction.

4. After people in your group have generated lists individually, share around the strengths. Then share the weaknesses. The recorder should make two lists to post for others in the room to read about.

Factors that will **assist** the integration of curriculum and instruction in our school:	Factors that will **impede** the integration of curriculum and instruction in our school:

Handout, Activity 6

Overhead Transparencies

Activity 1

Activity 2

Activity 4

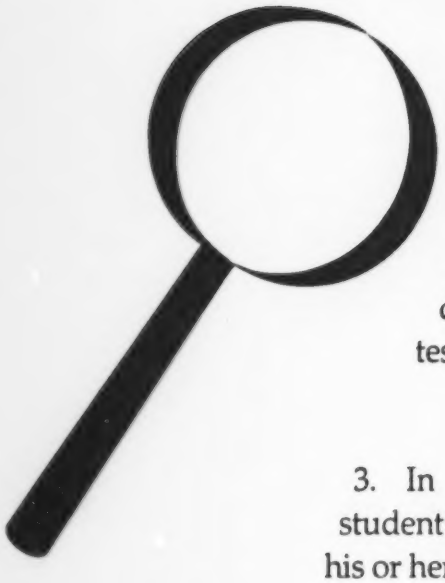
Activity 5

Activity 6

Activity 7

Directions
"Focus on Students and Their Needs"

1. Think of a student you have known who never reached his or her potential. Reflect on the major problems faced by that student, as you perceived them.

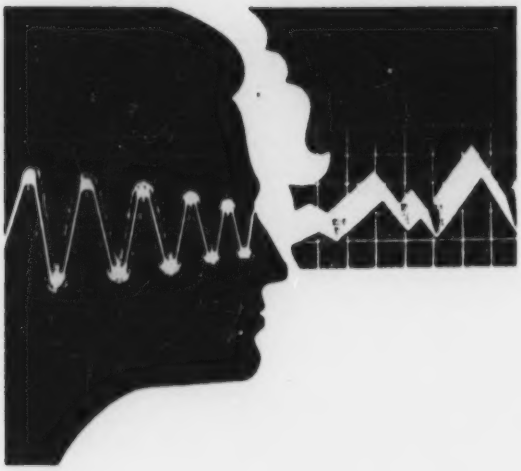


2. What did the school do--or fail to do--that may have contributed to that student's problems? Particularly think about how curriculum is selected; how it is presented to students; how meaningful or relevant it was for that student; the ways in which students are taught and tested (retention of facts).

3. In what kind of school environment might this student have thrived--or at least come closer to reaching his or her potential?

4. Be ready to share--in about one minute or less--a description of that student's problems, the school's possible contributions to those problems, and the kind of school environment in which that student would have been more successful.

Overhead 1-A
Activity 1



The brain searches for patterns and interconnections to construct meaning.

Overhead 2-A
Activity 2

Sally first let loose a team of gophers, but the plan backfired when the dog chased them away. She then threw a party, but the guests failed to bring their motorcycles. Furthermore, her stereo system was not loud enough. Sally spent the next day looking for a peeping tom but was unable to find one in the yellow pages. Obscene phone calls gave her some hope until the number was changed. It was the installation of blinking neon lights across the street that finally did the trick. Sally framed the ad from the classified section and now has it hanging on her wall.

Overhead 2-B
Activity 2

In 1367 Marain and the settlements ended a seven-year war with the Langurians and Pitoks. As a result of this war Languria was driven out of East Bacol. Marain would now rule Laman and other lands that had belonged to Languria. This brought peace to the Bacolian settlements....

Overhead 2-C
Activity 2

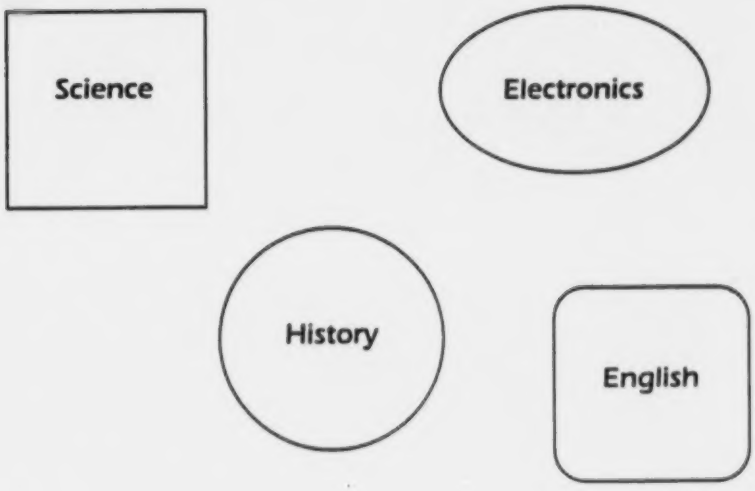
Integrate,

according to Webster's:

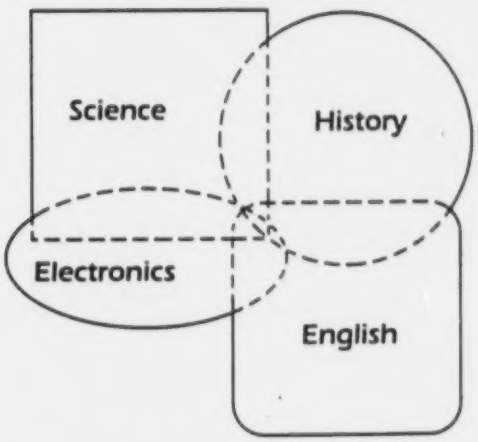
"to form, coordinate, or blend into a functioning or unified whole; to unite."

Overhead 2-D
Activity 2

Traditional



Integrated



Overhead 2-E
Activity 2

The master argument for curricular integration is simply that life is not divided into subjects....Language educators now believe it's better to integrate listening, speaking, reading, and writing; science educators, biology, physics, chemistry, and earth sciences; arts educators, drama, music, dance, and art; math educators, arithmetic, algebra, geometry, and calculus. Perhaps it's time to intermix these major subjects themselves.

–James Moffett

Overhead 2-F
Activity 2

Integrated Curriculum and Instruction
Reported Benefits to Students

1. greater enthusiasm for learning,
2. increased participation in and completion of learning activities and assignments,
3. better grasp of concepts and skills,
4. making connections across disciplines,
5. fewer discipline problems, and
6. improved attendance.

Overhead 2-G
Activity 2

Integrated Curriculum and Instruction
Benefits to Teachers

1. gain a sense of belonging and support when they work with a group of peers on a daily basis;

2. contribute their expertise to a team effort and are not overwhelmed by the need to be an expert in all areas of the curriculum;

3. increased feelings of efficacy, empowerment, and enthusiasm for teaching;

4. learning from colleagues;

5. increased creativity; and

6. professional renewal.

Overhead 2-H
Activity 2

Directions for Reflections
Benefits of Curriculum Integration

1. Read through the list of benefits to students. (Paragraph 2, page 5)

2. Which of these student outcomes would you most value in your classroom?

3. Read through the list of benefits to teachers. (Paragraph 3, page 5)

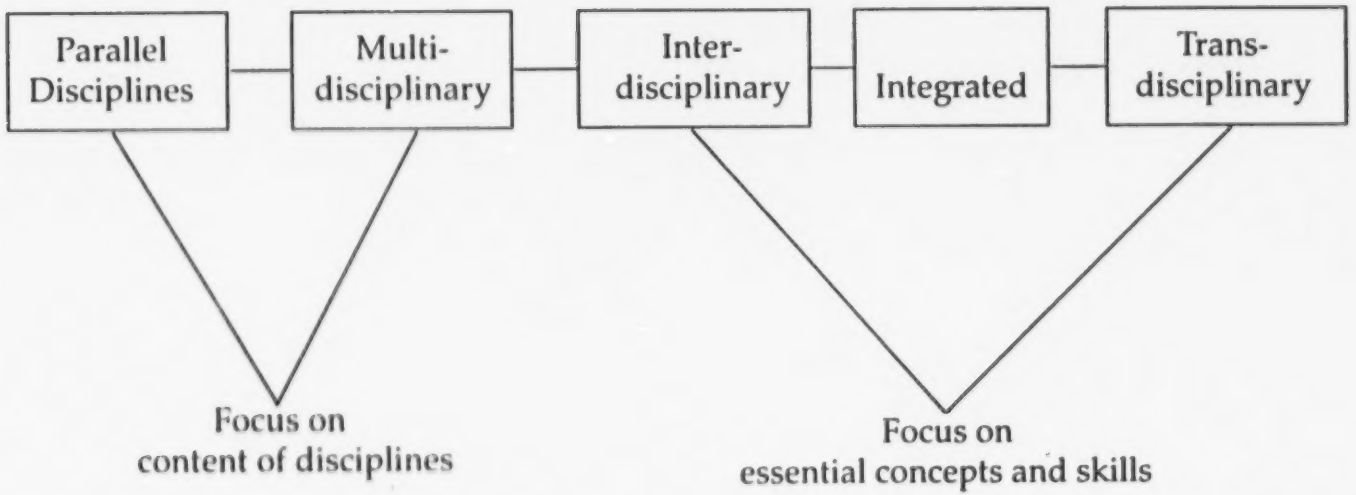
4. Which of these teacher outcomes would you most desire?

5. Speculate as to why curriculum integration might result in these benefits. Develop some hypotheses.

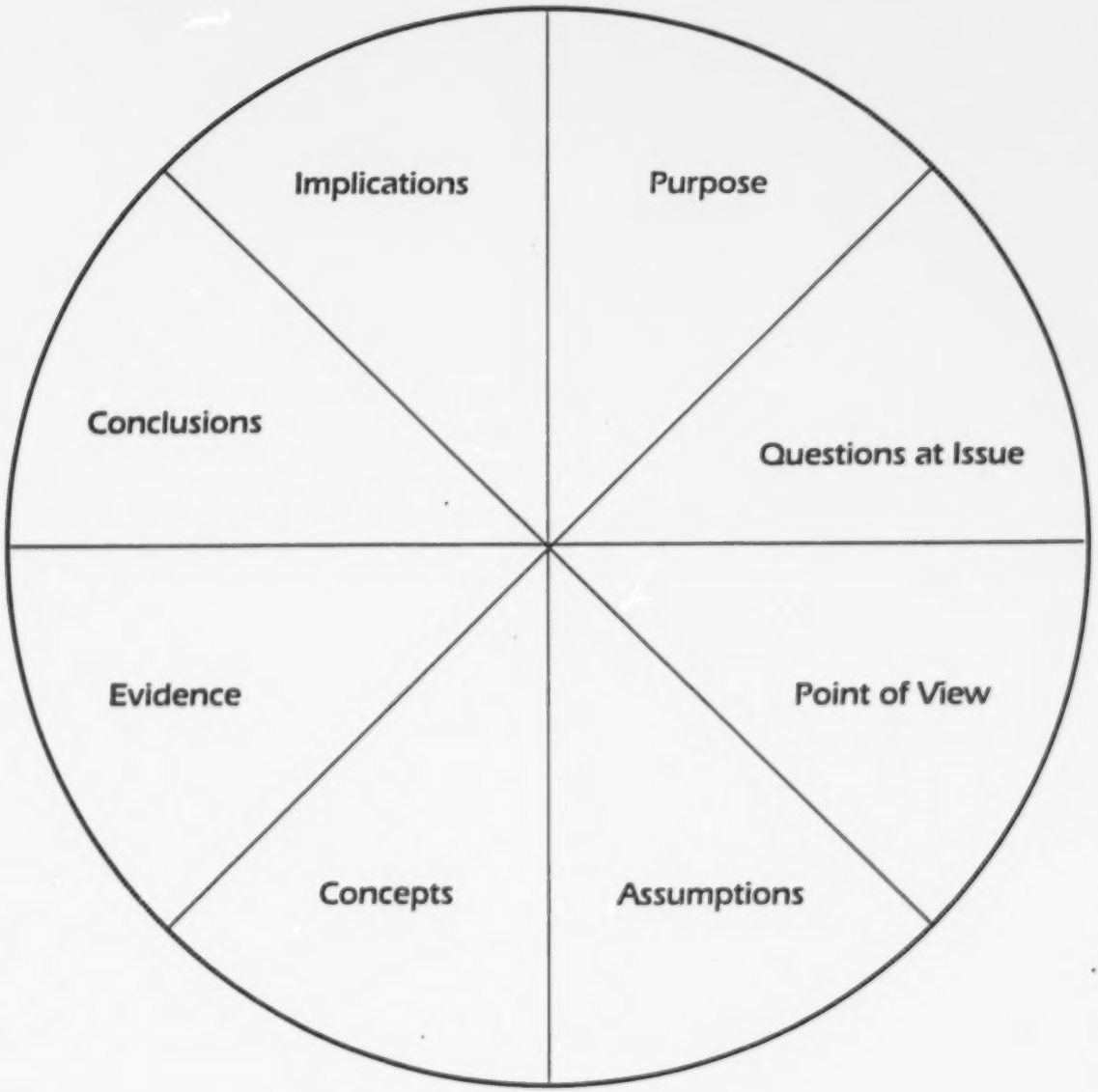
Overhead 2-I
Activity 2

Overhead 4-A
Activity 4

Evolutionary Stages Of Curriculum Integration



Elements of Reasoning



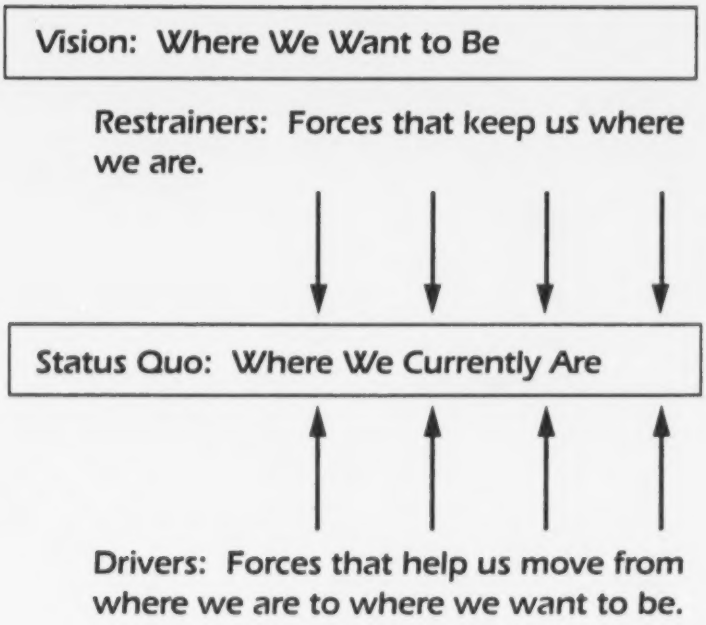
Overhead 5-A
Activity 5

Investigator Roles

- Philosophers
- Analysts
- Surveyors
- People Watchers
- Storytellers

Overhead 5-B
Activity 5

Force-Field Analysis


Vision: Where We Want to Be
Restrainers: Forces that keep us where we are.
Status Quo: Where We Currently Are
Drivers: Forces that help us move from where we are to where we want to be.

Overhead 6-A
Activity 6

Curriculum integration offers great potential to improve our students' learning. I am willing to support efforts to integrate the curriculum and instruction in our school.

Overhead 7-A
Activity 7

Directions for Fist of Five

Fist	=	I can't live with the decision; I will block it or leave the group.
One Finger	=	I can live with the decision; I don't like it but I won't block it.
Two Fingers	=	I am not excited by the decision; I will do some work to support it.
Three Fingers	=	I think the decision is okay; I will work to support it.
Four Fingers	=	I think the decision is good; I will work hard to support it.
Five Fingers	=	I think the decision is great; I will gladly support it.

Overhead 7-B
Activity 7